

# MAIN CURRENTS

## IN MODERN THOUGHT

APRIL

1947

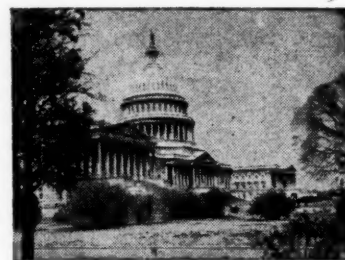


AN INDIAN ANTIQUITY

(SEE PAGE 28)

# MAIN CURRENTS IN MODERN THOUGHT

*A co-operative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.*



VOL. 5 - NO. 2

APRIL 1947

\$3 A YEAR

*"Ah, but a man's reach should exceed his grasp, or what's a heaven for?"*

—BROWNING

COMPARATIVE RELIGION.....*Editorial Summary*

VARIOUS VOICES.....*Briefs and Abstracts*

A New Teaching Mission.....*A. Gordon Melvin*

Wanted: a World Synopsis.....*Donald C. Williams*

Science and World Community.....*Melvin Rader*

Toward a Philosophy of Higher Education.....*Donald Faulkner*

The Unity of the Goal of Human Inquiry.....*Harold A. Larrabee*

RESTORING SOUL TO EDUCATION.....*F. L. Kunz*

READING TOWARD CONCEPTS.....*A Reasoned Bibliography*

Physics (concluded), Biology, and Psychology

THERE IS A WORLD RELIGION (Concluded).....*Edited by E. B. Sellon*

OUR COVER ILLUSTRATION is discussed on page 28, column 2, of this issue. It displays the cruciform arrangement of the four great Hindu temple establishments (*mathams*) set up by the codifier of Hinduism, Sri Shankaracharya. If a free India supplies us in the future with scholars who can apply exactness to archaeology and history, along with sustained confidence in the value of India's cultural and intellectual inventions, some of these mysteries of that ancient land may become rational and significant. At present Western positivism and physicalism are frequently baffled by indisputable facts found in India, and the spread of this shallow doctrine among Indian scholars has even led some of them to dismiss the achievements of their own country as mere anthropological curiosities. Under this blight even the hardest kinds of facts, such as this disposition of the *mathams* in a cross, are lost to view, chronology is confused, and values squandered. We have no means of knowing with certainty the date of Shankaracharya, or when this arrangement of the *mathams* was set up. It is possible that the original Shankaracharya has been confused with one or more of the men who have been at the head of the southern *matham* (Shringa-giri, in Mysore State), who always bear the title of "the Shankaracharya." All that is certain of this remarkable fact of the Hindu cross of the *mathams* is its existence for many centuries.

MAIN CURRENTS IN MODERN THOUGHT is published quarterly to call attention to significant contributions to learning currently being made by leading workers in the multiple fields into which knowledge has come to be classified. It relates these advances to each other and to the classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. Its editors assume that the principles of art, the universals of philosophy, the laws of Nature and Man as formulated by science, and the truths of comparative religion, can be orchestrated into a harmonic, meaningful, ethical body of teachings which can and should be made the central core of curricular study in the educative process at all levels of development. In condensing text, square brackets [ ] indicate editorial interpolation. Three dots . . . in the text indicates a word, phrase or passage omitted in the interest of brevity or clarity. Other usages are standard. \$3.00 a year. Contributors to MAIN CURRENTS enjoy full liberty of opinion and of expression in these pages. Copyright 1947, by F. L. Kunz, Editor, Port Chester, New York, to whom all communications regarding MAIN CURRENTS IN MODERN THOUGHT should be addressed. E. B. Sellon, Associate Editor. Entered as second class matter April 13th, 1946, at the post office at Port Chester, New York, under the Act of March 3rd, 1879.

## COMPARATIVE RELIGION

Knowledge of the world's great living religions, formerly tucked away in auxiliary courses for specialists or as phenomena of historical and anthropological interest, have now become matters of practical importance in principal schools. Columbia University, we are told, is proposing a study of them which is to be compulsory for freshmen. When revising its curriculum during the war, the committee at Yale considered the Upanishads suitable terminal material in its comparable offering to freshmen. Other colleges have recognized the importance of comparative religion, in various forms, to the world citizen, and this awakening may be expected to continue, even though Harvard (up to its announcement of courses for 1946-47) is among those colleges which as yet display in general education courses no important sign of intending to awaken newly enrolled students to contemporary religious realities and to comparative religion's verities.

The schools progressive in this particular are responding to a broad array of developments in communications, in adjustments by Christian missions to new circumstances in the East, and in the UNO and UNESCO. The words of Professor W. E. Hocking in and after *Rethinking Missions*, or such a book as *The Pilgrimage of Buddhism*, by Dr. J. G. Pratt, or the evolution to universality in E. Stanley Jones, as results of their experiences in India and the Farther East, are good examples of what has finally come home in the minds of liberal men. The colleges are at last registering a philosophic and social growth which has been going on rapidly in many individuals.

There is, however, a political and historical aspect of this matter which makes it much more than an academic question. The long years of dogmatic isolationism which affected most religious folk among Western nations occurred at the same time when a pitiful positivism became the habitual attitude of science, now declining. The facts no longer support such narrowness. It is likely to pass away as a result of such educational efforts as we have just mentioned, or in the holocaust we are preparing for ourselves.

But those years marked by mistaken purpose have weakened and confused us. The Christian religion slackened in experimental development when by divorcement it was denied the good effects of science, having already lost that strengthening which comes from mutuality among faiths and hence universality. For the isolationism from other faiths is nearly as old as Christian history, although neither Jesus nor Muhammad sanctioned such a sense of superiority. A new opportunity to live and learn was offered when these two religions came into touch with India, but as far as Christianity is concerned this occurred when the scientific and experimental mood was passing away from it into rising science.

Impartial and candid study of these facts of history are of first importance in understanding the curious and menacing political dead center at which we have

## Editorial Summary

arrived in this country. When Secretary Marshall told the Council of Foreign Ministers on March 14th that we mean to defend "the right of every individual to develop his mind and soul," he was speaking for a nation whose chief educators cannot agree whether souls exist and, if so, what they are, or how they are to be compared with minds and bodies. Here the new interest of colleges in comparative religion can count.

For if souls have real existence, and if science is a valid discipline and hence good in the field of religious experience, then there must be principles common to all religions and these principles must be experimentally useful. These laws of higher nature, of such peculiar importance to man and not revealed by any science except the most subtle of recent configuration psychologies and some aspects of parapsychology, should be largely and rationally demonstrable on the campus for use in church, in business, and affairs of state. If we had possession of them now, Secretary Marshall's fine words would not sound so hollowly over the world.

The first step in such a disclosure of law in the spiritual world is the comparison of religions to find, first, the agreements or universal directives for conduct, and to end (by the same token) the weakening isolation of Christianity. Second, we have to discover the experimental techniques of religion in terms of individual psychology and of sociology. We shall then be doing in religion what is done in science: seeking universality and experiential reality.

We conclude in the present issue of MAIN CURRENTS the publication of a simple example of exact comparisons of a few central teachings in the several greatest living faiths. This small beginning could be expanded and given remarkable precision, provided we seek help in the Far East. For that group of religions which have their effective origins in India possess a body of experimental doctrine (as Hocking has pointed out) indispensable if we wish to accelerate realism in religious study. Gathering together such a block of universal truths for man has the effect of picking up knowledge at the upper level of the hierarchy of curricular subjects, giving the "homeward vision" new ethical power and new meaning philosophically.

It may not be easy to establish an impersonal point of view toward the individual religion into which the student happens to be born. Religious chauvinism is all too common. The corrective is in a supply of impartial and interesting historical information which shows the general principles of spiritual existence at work. The assumption is that Jesus, Buddha, and Muhammad, and all other Personages who have founded faiths, are part of a natural process at the uppermost levels of human experience and beyond, where the natural merges into the creative. There is no need to try to settle the metaphysical questions involved in that assumption in advance, but merely to get at good concepts of religious process by comparative study, as chemical elements were marshalled before the periodic table could be deduced.



Current events would prevent history from seeming inapplicable and hence dull. Who can learn unmoved of the refusal of admission of M. K. Gandhi to a church in South Africa because of his color? Is there anyone capable of being educated who cannot appreciate the role of religion in our relation to Russia? As a purely practical proposition, what are we to make of the fact that the Judaic-Christian-Islamic complex has been associated with force and violence upon an unprecedented scale, whereas the Hindu-Buddhist-Taoist nexus has been non-violent?

Religions thus studied as realistic and experimental subjects can be made more interesting than almost any other to the generality of students, because the subject matter concerns the students' deepest and most wondrous resources. But such an appeal can only succeed on the basis we are discussing. Owing to the fragmentary character of our accounts of the life of Jesus, even that superb high drama can be usefully supplemented. The life of Muhammad and of Siddharta Gautama are, by contrast, very well known. Again, Hinduism provides a folklore and a metaphysics and an intellectual challenge for the finest minds, and historically established facts in its long life are among the most remarkable events in the life of man. In such rich soil are values to be found, and to be found nowhere else, for India is an immense historical continuum, which makes it a reservoir of all human experience. If we had such a remarkable understanding of man through science that we could afford to ignore collective human traditions, we could start afresh. That is the dream of the West. But until we get some better understanding of the human constitution we are compelled to draw upon experience wherever we can find it conserved. Let us by all means apply our minds to the anthropological complex, but we cannot afford to despise it. It is still our best source for guidance in understanding man as a species.

Shankaracharya is an example of the fabulous, but quite historical, enrichment we can get from India for our young college students. We have first, of course, to make sure that the faculty members in charge of general education in its new forms have heard of him. It is revealing to realize that this name, that of the most remarkable dialectical genius mankind has entertained, is unknown among people who consider themselves fit to prepare our citizens for a new world. Here is genius without a superior, to whom finally most of the finest Hindu minds look with justified reverence, the cultural focus of the oldest and numerically one of the largest of the so-called United Nations, yet going almost totally unknown. How can we call ourselves educated if we practice, as we do, such isolationism and conceit where most we should foster mutuality and liberal living?

Shankaracharya, like Jesus, is reputed to have lived to be about thirty-two years of age. He was a West Coast (Nambudri) Brahmin. His date is uncertain, as is so common in Indian history, but the main and almost unbelievable achievements in this short life are beyond question. He found time to travel throughout India, after a life of home and school, marriage and patern-

ity, and proper Hindu duty to society. Yet before he passed from the scene, he did three things, any one of which would be remarkable in a man who had seventy years.

He founded the Smarta Brahmana caste among the Telugu and Tamil peoples of Southeastern India. This community conserves and continues a tradition unmatched in intellectual acumen, conjoined until recently with the simple living appropriate in India to spiritual leadership.

He established the philosophical point of view called the Vedanta (end or goal of the Vedas). It is quite impossible to describe this system honestly without sounding foolishly lyrical. But if even general descriptions of its content and technique be read, let alone the original discourses of Shankara himself, the grandeur and acuteness will be seen. (See *India's Outlook on Life*, by J. C. Chatterji, for example, if available. It was privately printed and is difficult to obtain).

In the meantime, he established the four regional headquarters of modern Hinduism, the *mathams* or shrines, something like episcopates, but exercising their influence without discipline. It must be understood that he selected the spots where these institutions should be established, and that they are nearly at the four extremities of that vast country: one in the Himalayas, at the Ganges headwaters, Kedarath, one far south, in Mysore State, one at Puri on the east coast, and the fourth in India's western extremity. But we must mark a fact more peculiar than the immense distances involved. For these points are not only in couples which lie over one thousand miles each from the other, like the ends of the two sticks crossed in a diamond shaped kite. More arresting is the fact that at that early date, not fewer than seven hundred years ago and more likely two or three times that period, Shankara was able to select spots for the *mathams* which, when joined by great circle lines, cross almost exactly at right angles. To this day, at the extreme northern *matham*, Nambudri Brahmins serve as chiefs, witness to Shankara's personal establishment of this singular system, distributed to the four corners with an exactness which must have involved an astronomy and a geodesy worthy of respect in any age, especially one without modern physical instruments.

We cite this small item out of many because it is typical of what could be got from other cultures if only we went at the task not from the top level alone, in terms of belief, but all up and down the vertical range of the hierarchy of subjects, keeping realism ever in mind. Knowledge of what actually has gone on in these cultures, not disparaging interpretations into our limited framework, is the educational necessity for world friendships and co-operation.

Returning to the matter of comparative religion in courses of general education upon campuses, the chief feature of such an enterprise is clear and difficult. The Western mind is somewhat accustomed to the common features of the Judaic-Christian-Islamic complex, for natural reasons of history and nearness. This is not to say that mutuality has been achieved or anything

approximating that. But the interrelations can be understood, because none of these religions is rich in native metaphysics. On the whole they are a class, the so-called religions of one book.

To understand and profit from the Hindu-Buddhist-Taoist complex requires labor of another and more demanding order. It is nearly impossible to expect much to result from a direct approach. A bridge must be built. That bridge is a close study of the manner in which the Moslem power acted as a carrier from the far east to Europe. We have to know how much more than the decimal system and the place notation system, and zero, came to us from India. We have to see India as she is, that reservoir. Facts alone, hard facts and hard perhaps to take, are required for this. Here is a land (the Deccan) which has not been under the sea since before Cambrian times. No other place is known to have been so long above sea level. Every event in

human history India has been there to witness, perhaps to welcome and to conserve. All that historic immensity is the antithesis to our rushing and bustling enterprise. To look back may seem obscurantist. It is true that at the center of India, taking the *mathams* as the corners, is one of the most primitive tribes in the world. But are we therefore to despise the rest? The question is a fair one: Has anything more primitive than the bombing of Hiroshima ever occurred anywhere on the globe at any time? Is anything more primitive than the feelings which supposedly religious people in our own country sometimes display in their political moments?

We cannot judge ourselves, but the next few years may judge us, and with a violence of unparalleled ferocity. Would that the new courses on progressive campuses could come in time to give a new generation the benefits of comparative religion as universal and experimental rules for a global society!

## VARIOUS VOICES

### A New Teaching Mission

In the Middle Ages human beings were told what to think, and held to it in the name of orthodoxy.

In the Renaissance they discovered nature, and man as an individual, and developed as a result independence of thought.

As a natural reaction to too tight orthodoxy and the compulsion of the Middle Ages, men turned to too great freedom and opened their ears to all doctrines equally.

Here they committed the error of assuming that all doctrines were equally good; that all should be heard with equal respect.

In a world in which all doctrines were heard, opportunity was given for the preaching of physicalism. The man who heard all doctrines called himself a liberal. Since the suppressed areas of thought were the most novel and startling, the liberal tended to preach them in his schools and universities, giving them priority over long-established and not such sensational truths. Thus Freudianism, Evolutionism (as a *belief*), and Physicalism (and other very limited doctrines) got the upper hand.

Such teachings, without the older realities, which were suppressed, disturbed the moral order.

The corrective lies in studying all doctrines and teaching, but not calling them equally good. Rather should we "try the spirits", "prove all things: hold fast that which is good." This is sound, even scientific, procedure.

Just as concepts built by education have undermined our culture and brought war, chaos, confusion, inflation, mental and physical illness, so true concepts will restore men and cure these ills.

The true concepts are those which are in accordance

## Brief Abstracts

with nature, unflinchingly true to reality, and those which are in harmony with observable law.

There are some few teachers in the world who know these facts and laws. They should prepare a series of teaching materials and be supported in a small teaching foundation. New teachers would thus be taught and new sharp tools for teaching prepared and issued (studies, charts, recordings, moving pictures).

Thus would the foundation be laid for a teaching mission to restore human thought as a basis for restoring humanity.

(The foregoing course of reasoning was kindly prepared for and issued to the Education Group of the annual conference of the Laymen's Movement for a Christian World, March 29, 1947, by Dr. A. Gordon Melvin, Professor of Education, College of the City of New York. It points clearly to a new duty before the whole world of education).

### Wanted: A Valid World Synopsis

The contrast between subjectivist and realist is sharp today in the theory of general education. Shall we unify the curriculum in accordance with the subjective and accidental associations which the several scholastic branches have as topics of human attention, or shall we unify it in accordance with the objective and real connections which they have in the world outside? The sophistic procedure, generally taken for granted by American champions of general education, and taught by Mr. Dewey, is the first. It would relate chemistry and political science, say, by tracing their historical development, their mutual influences, their methods of inquiry, and their roles in our social economy. Everything then becomes a part of anthropology. The realistic procedure, on the other hand, is to unify knowledge at the other end, cosmologically, by considering the unity which the *objects* of chemistry and political science have as things and events occurring in the one real fabric

of nature. Without a basis in cosmology, or a world synopsis, we cannot usefully understand even the anthropological situation.

Adherents to Mr. Dewey's theory of general education who do not share, or are unconscious of, his whole subjectivistic philosophy, may be affected by two minor reasons for preferring the anthropological to the cosmological attack. The first is that the cosmological school has been unfortunate in its recent spokesmen, Mr. Hutchins and his coadjutors, who associate it with an obsolete cosmology with a record of inquisitorial hostility to democracy and science. In fact, however, if Mr. Dewey and his school would relax their gratuitous interdiction on scientific metaphysics, the methods which they recommend elsewhere are quite ready to yield us a modern empirical cosmology. Even Mr. Hutchins might in the long run prefer a better confirmed philosophy, and he adheres to pre-scientific ideas, perhaps, mainly because people like Mr. Dewey have persuaded him that the only alternative is sophistic anthropologism.

The second motive for opposing the realistic kind of synthesis is a conviction that cosmology is more difficult and controversial than studies of social relations. This is doubtless true. The notion, however, which the Deweyans share with the Harvard authors of *General Education in a Free Society*, that whereas it is right and salutary for a little subject, like the genetics of the fruit fly, to be technical and difficult, the biggest subject, philosophy, must fit loosely and easily the tastes of the tyro, seems to me a disastrous misconception. To offset this impediment to cosmology, we must rely on the fact that most young people are as curious as cats about the nature of things, and may be less bored by even a lame description of ultimate reality than by the most transparent account of historical origins and social significance. (Quoted by permission of author and publisher from *Mr. John Dewey on Problems and Men*, by Donald C. Williams, in *The Harvard Educational Review*, Vol. 16, No. 4, Fall, 1946).

### Science and World Community

H. G. Wells once remarked that the fate of the world depends upon a race between education and catastrophe; but in view of the atomic bomb, he has more recently announced that catastrophe is obviously winning. . . . All that we cherish may be destroyed because man's capacity to make scientific discoveries outstrips his capacity to control them.

Looked at in this context, the question what men shall believe acquires an incredible poignancy. . . . What is man—a soul, a mechanism, a psychophysical organism? . . . What is the essential value of human life? What is the nature of the good society? . . . Without a world view, strong enough to be the basis of civilization, we cannot substitute reintegration for the disintegration which has been at work for several centuries. . . .

As we study contemporary science and the philosophy based upon it, we begin to see an emerging synthesis of thought and action, . . . based upon two ideas. First,

the world is a complex of interacting processes. . . . Second, the world as evolving has various levels with distinct, irreducible characteristics, such as the mechanical, the organic, the conscious. These two ideas coalesce into a single concept: the evolving multidimensional community of all human beings and, in an infinitely wider compass, of all the interacting entities in the universe. . . .

As a result of the new concepts of space-time, of relativity, of quantum and nuclear physics, . . . the universe depicted by physical science has become radically different from the "world machine" of Galileo and Newton. This difference primarily involves the increased recognition of wholes and integral processes. . . . Everywhere in science the old fixed concepts and counters have broken down and a new world view is emerging.

If we analyze what is involved in this world view, we find four essential propositions. First, the universe exhibits a series of levels of increasing complexity and wider integration: electrons, atoms, molecules, simple cells, plants, animals, personalities, human communities. Second, there is a tendency for these levels to succeed each other in time, the more inclusive and complex levels emerging at a later stage of cosmic development; and hence reality is dynamic and evolutionary. Third, the integration also occurs as morphological envelopes in space: . . . the body envelopes the organ, the organ the cell, the cell the molecule. . . . Fourth, each envelope and integrative level exhibits its own emergent qualities and laws. . . . Thus both a *leveling up* and a *leveling down* interpretation of science and reality must be abandoned in favor of a theory of *distinct, graded, and progressive* levels. Finally, it follows that the world is to be interpreted in terms of a flexible organicism, since nature as a whole exhibits a *nisus* toward social organization. . . .

The insight that the influence of the whole must be kept in mind in order to explain the character and activity of any actual part has had an increasing effect upon both laymen and scientists. . . . Many laymen and some few scientists, however, still interpret plant and animal life almost exclusively in terms of an individualistic struggle for survival. This tendency goes back to fundamental Darwinian concepts: "chance variation," "natural selection," and "survival of the fittest," (which), when applied to society, were almost always used to support individualism and predatory behavior: to oppose social humanitarianism and to rationalize war, imperialism, and exploitative capitalism. . . .

Since the time of Darwin, however, a vast amount of evidence has been amassed to show that not only struggle but mutual aid is a major factor in evolution. . . . In view of the newer trends in both the physical and biological sciences, we can say that our tendencies toward community are as innate and as well founded in nature as any of our competitive drives. . . .

The English biologist Joseph Needham declares: "It may be that we are on the threshold of a long period, . . . in which the organic conception of the world will transform society, giving it a unity more comradely and equal than feudalism, but less chaotic and self-con-



tradictory than the centuries of capitalist atomism.”\* . . . If we are not to misunderstand Needham . . . we must recognize that “organic” . . . must be understood in terms of different grades and types of unity. First, a part may be related to a whole in such a manner that its normal characteristics and activities will remain virtually unchanged whether it is “in” its normal whole or not. . . . Second, a part may be related to a whole in such a manner that it undergoes an *internal* change, small or great, when it is isolated. Such *functional dependence* . . . can be called “organic” in the wide and sometimes metaphorical use of the term. Third, a part may be related to a whole in such a manner that it becomes quite unrecognizable, or cannot even exist, when isolated. This *existential dependence* can be called “organic” in the strictest sense of the term. . . . It is this emphasis that I have in mind when I speak of “a new world view.” . . .

If we turn from the *content* to the *method* of science, we find that it involves, to employ the suggestive phrase of Josiah Royce, “a community of interpretation.” . . . The context within which an object acquires meaning is not merely the individual’s private experience but the shared experience of a group of people. . . . The environment in which we all move, breathe, and have our being . . . is witnessed by the testimony of innumerable human beings and hence is part of the “real world.” Thus there is a close connection between the quest for truth and the creation of a community. . . . The very structure of science is a kind of organized “community” of facts . . . and the very meaning of a fact is that it can meet the test of *social* verification. . . . Therefore science, like common sense, is essentially social in method. . . .

The specialized and analytical character of most contemporary science, however, tends to counteract the communalizing and integrating effect of scientific method. . . . The fast accumulating mass of information remains . . . a chaos of “facts” rather than a unified body of culture. . . . What is required, therefore, is a great work of synthesis and general education . . . a profound intellectual reorientation: “a unified approach to knowledge and life.” . . . A detailed synthesis. . . . is very difficult to achieve. If we are to have a reliable “world view” . . . we must realize that the task now devolves upon an organized band of truth seekers, supplementing and complementing and qualifying one another’s vision. . . .

The real remedy is the interpenetration of so-called opposites, the achievement of free organization and organized freedom; not the buckling of minds to a pre-ordained plan, but the creation of a plan by the free interaction of minds; in short, the attainment of a *free* community of interpretation.

(An abstract made with kind permission of author and publisher from an article by Dr. Melvin Rader in *The Scientific Monthly*, June, 1946)

\* *A Biologist's View of Whitehead*, in A. S. Schilp, Ed., *The Philosophy of Alfred North Whitehead*, Evanston, 1941, page 251.

## Toward a Philosophy of Christian Higher Education

The world has just passed through a technological revolution in which the human race has come as near to catastrophe as ever in the short history of recorded time. . . . Only the educator has an answer; universal education. . . . He realizes that much of the business going on in schools of this and other lands does not dispel fear and distrust and hate; he recognizes only too well that in some instances the school has bred and nurtured the very causes of destruction. . . .

The church college has no monopoly on the ideal of brotherhood. But the Christ had much to say about the brotherhood of man 2000 years before the atomic bomb, and the colleges which are avowedly *His* schools logically should be expected to follow His teaching. . . . The most impelling business of the world, and principally of the American people because of our position of leadership, and not at all, parenthetically, because of our tragic vulnerability, should be education for living together. . . . The *Washington Educators' Dispatch* of Thursday, September 5, 1946, had this to say of the crisis facing us today: “Hardheaded educators say we have ten years of grace . . . ten years in which peace will be ours. . . . The extra pull to outrace catastrophe can be given only by teachers, educational and spiritual workers of all countries.” . . .

Education dare not be patient. American youth must be led—although the true situation is that they are even now held back by their teachers, so we should say must be *allowed*—to seek, to adopt and to fight for cures for these diseases of the social and political life of the community, the nation and the world. . . .

What kind of education will train leaders for world brotherhood and citizenship? What are the elements in the educational philosophy which the church college must adopt to bring about this necessary intellectual, moral and spiritual resolution? . . . The church college cannot be an instrument of reaction, a defender of a social and economic *status quo*.

We must take into account also the fact that life is organismic. What affects one part, affects the whole of life. Any part cannot operate except in relationship to the whole. The part cannot be thoroughly understood except as it is seen as a part of the whole and in relationship to the whole. Knowledge, events, responsibilities, etc., are inter-dependent. Educational efforts cannot operate in a vacuum. They are part of, rather than something set apart from or over against life, society, community, humanity. . . .

A major principle in the educational program of the church college in revolution is that the church college be democratic. . . . Second in importance to the democratic attitude and approach is the need for the development of creative intelligence. Not only the understanding and use of the principles of sound reasoning, but also freedom for the search for truth by students and faculty must characterize the program of the church college. . . .

As problems are explored the students and their teachers will draw upon the entire resources of the

liberal arts curriculum. . . It is difficult to see, then, how the student can be ignorant of the facts, attitudes and techniques of any of the areas of research into the nature of the universe and of social organization.

The principle upon which the selection of curriculum materials will be based is the contribution which any phase of knowledge can make to the understanding and practice of world-wide brotherhood. In particular, the physical sciences will be used to give a clear concept of the physical universe, and only in a secondary sense for their vocational contribution. . . . The human sciences in which we study man's own nature, his relationship to his fellow men and his relationship to God must be emphasized if an effective leadership for a moral and spiritual revolution is to be developed.

A principle upon which the teaching staff will be built is that instructors must be chosen for their catholicity of outlook and training, rather than for their professional and vocational competence in one of the various departments of the classical college. . . . They must bring to the problem of world brotherhood an integrating outlook on life. . . .

Time is an important element in our race with catastrophe. Prejudice and distrust may not wait on our training of even one new generation of college students. . . . Therefore, education will take place, if it is to have any measure of effectiveness towards bringing about a moral and spiritual regeneration of humanity, in living situations with personal meaning to the student. For instance, the separation of town and gown, and the enforced disinterest of teachers and students in the market place, in the city hall, in the public school must end. (The foregoing is an abstract of an article by Dr. Donald Faulkner, *Christian Education*, December 1946, approved by the author, who is Executive Secretary of the Association of Northern Baptist Educational Institutions)

### The Unity of the Goal of Human Inquiry

If Voltaire was right, "men will continue to commit atrocities as long as they continue to believe absurdities." And they will continue to believe absurdities until they learn how to improve their thinking, especially about human social relationships. Alert students come to college with that dominant purpose in mind. They want, in Alfred North Whitehead's phrase, "to learn the art of the utilization of knowledge". Often they are assured that they will be taught "how to think and not what to think". But the "thinking" courses which they are offered are frequently either so devoted to expounding the conditions of perfect consistency that their relevance to human problems is far from apparent, or else they are little more than superficial descriptions of propaganda and how to detect it.

One alternative is to give up the whole broad attempt to improve one's "form" as a thinker, and to concentrate upon mastering the separate techniques of the many fields and departments of learning. That would mean learning how to think about history exclusively in

history courses, about biology in biology courses, about literature in literature courses, and so on. But our century has already earned for itself the ugly name of schizoid or "split-minded," and we are constantly exhorted to reintegrate our scattered arts and sciences. The American liberal arts college has striven to promote the broad cultivation of the general intellectual capacities of its students before they begin to specialize. This has become steadily more difficult as new subdivisions of knowledge have multiplied. The gulf which has widened between the sciences and the humanities, with the social studies endeavoring to supply a bridge between the two, is both notorious and inexcusable.

In despair, there are those who would attempt the traditional discipline associated with the former unity of learning by a return to the Middle Ages, as if the Scholastic *trivium* of grammar, rhetoric, and logic must somehow be able to do for the twentieth century what it did for the thirteenth. But the way to unify living learning is not by the invoking of the magic of dead formulas. It is by going forward to the achievement of order in terms that shall have profited by the best of the past, that shall pertain to the present, and that shall face toward the future. (Quoted by permission from *Reliable Knowledge* by Harold A. Larrabee, Houghton Mifflin, 1945)

### Herbart Saw It over a Hundred Years Ago

The ultimate purpose of instruction is contained in the notion, *virtue*. But in order to realize the final aim another and nearer one must be set up. We may term it *many-sidedness of interest*. The word *interest* stands in general for that kind of mental activity which it is the business of instruction to incite. Mere information does not suffice; for this we think of as supply or store of facts, which a person might possess or lack and still remain the same being. But he who lays hold of this information and reaches out for more takes an interest in it. Since, however, this mental activity is varied, we need to add the further determination supplied by the term *many-sided*. [John Frederick Herbart (1776-1841), in his *Outlines of Educational Doctrine*, Part 2, Section 2, Chapter 2. (Quoted from Monroe, *A Brief Course in the History of Education*, Macmillan, 1917, p. 325.)]

### A Significant Conference

The foregoing passages from various writers were distributed in advance to the education group of the Annual Conference of the Laymen's Movement for a Christian World, which met at the Hotel New Yorker, Saturday morning, March 29th. To focus thought further, the following article (*Restoring Soul to Education*) was also issued in advance, and was summarized at the meeting, which resulted in specific resolutions recommending continuing action, month by month, to progress a great program of exploration, research, and the gathering of materials to document a working synthesis of science, religion, art, and philosophy.



## RESTORING SOUL TO EDUCATION\*

F. L. Kunz

A precise analysis of our conceptual structure has never been attempted, except perhaps in very restricted domains, and it seems to me that there is room here for much important future work. (P. W. Bridgman, Hollis Professor of Mathematics and Natural Philosophy, Harvard University, and Nobel Prizeman, 1947, in *The Logic of Modern Physics*, Macmillan, 1927).

*The business before the world of Education is the most important, most urgent, and most hopeful duty confronting any group today. That is a large claim, supported by the following five statements:*

1. Democracy is the political hope of the world.
2. A right education is the hope of democracy.
3. American education is widely admitted to be quite inadequate.
4. The means to make it adequate are available.
5. This leaves clearly before us the task—immense and responsible, as it is—of finding and commencing the practical program which will apply the known means and actual resources.

The proposition that democracy is the "last fair hope of earth", and that a right education alone guarantees democracy should need no exposition.

But close examination is required for the statement that we, so powerful among the democracies, do not have a right education, although we have the means to make it right. Hence an identification of the means, and of a proposed program, must be supplied.

In education, human beings are the materials worked upon and worked with. American education is intended to result in free and cultivated citizens. Its purpose is to give them a life of rich fulfilment.

The processes employed to achieve this end are found in courses of study, in primary, elementary, and secondary schools, in teachers colleges, colleges of liberal arts, universities, institutes of science, technology, theology and the like. These courses, laboratories, libraries, etc., are the means, but the children and youths remain the materials.

Further, we must distinguish between working with children and youth, to the end that they may be fulfilled in all ways (general and liberal education), and working to the end that they may earn a living, directly as earner, indirectly as housewife. To earn a living does not mean that one necessarily lives fully. And it is becoming increasingly clear that for the purpose of a free, mass-production, organic society (which means a democracy that functions as a whole, a living economy), a full life for all is no less a basic requirement than is the livelihood. It is this that education must achieve for us.

Hence arises the great central issue: If human beings are the materials with which and upon which education does its work, then *what is a human being?* The amazing thing is that we who are all human beings should

have no certain knowledge with which to answer this question in a way which is generally accepted inside the educational system. There are not even generally agreed-upon assumptions. Some say a human being is a body, and no more. Others say we are dealing with a soul, an immortal spiritual essence. But how can we build a society without knowing the nature of the material, any more than we could build a bridge without being sure whether it was to be made of rubber, steel or sodium chloride?

No good work can be done with and for children and youth until a fair amount of general agreement as to basic issues has been arrived at. Realization of the importance of this is the same as understanding why there is no education of real value without a philosophy. In our educational system we Americans have no proper philosophy. The question may be asked: Have we not a working knowledge of man and nature? The answer is no. We have some firm knowledge of energy and matter, and almost none significant of life and man.

In the foregoing we have, in effect, referred to the former conflict between religion and science. This strife no longer need exist, but past battles have left both parties exhausted and wary. Today the most advanced science is the friend of workable religion, not its enemy, but the evil after-effects of materialistic science and formal, narrow religion are seen and felt everywhere, even in colleges and universities of religious affiliation. The solution of this difficulty is at hand, however; one that will be everywhere the same, and good in all educational institutions. This is essential, for today there can be no valid philosophy which does not apply universally, and have the sanction of science. Moreover, only a solution which is universal can be admissible by law to the public school system, the bulwark of democracy.

Before proceeding to discuss the solution, the after-effect of the former struggle between science (when it was materialism) and religion (when it was clinging to dogmas) has to be clearly understood. It was the natural attempt by science to limit philosophy to physicalism, which is the mistaken conviction that physical matter is the only thing in the world which can be known or that exists.

This assumption of physicalism was completely incompatible with religion, as religion is historically known and generally understood. Hence words used in chapel on Sunday might have had no meaning that could be validated in chemistry class on Monday. Schizophrenia (split personality) was the result in the student, and it has spread to become the divisive evil of our whole society and times: the disastrous tendency to put one institution, one party, one country against another, and

\* Remarks addressed to the Education Group of the Laymen's Conference, New York City, March 29, 1947.

so to be always against something. In general, the academic result was to consider religion to be based on irrational emotion, whereas science was held to be founded on reason, and this led to the belief that the achievement of a level of education where feeling and reason unite in intelligence was hopeless.

The new, contemporary science makes possible the ending of this disunion, for it is not limited to physicality.

The greatest difficulty now lies in the fact that *no adequate group works systematically upon the conceptual union of the arts, the universals of philosophy, the truths and values of comparative religion, and the laws of Nature as stated by science.* Hence, we have the means, but no program to use the means.

Before turning to the program, it is well to dismiss an important distraction which comes up repeatedly. People say they know scientific men and women who are physicalists but whose conduct and ethics are preferable to those of some people who are avowedly religious. This is quite possible, since people may, or may not, believe in soul and spirit and still be thoroughly ignorant of what those words mean. Belief may be traditional and ineffectual, and denial may be verbal and meaningless. The question is not what people believe, but what are the facts. Ignorance does not prevent people from being soul and spirit, if soul and spirit exist. Babies don't know they have hearts, yet the pulse goes right along. People may do right because of the sum-total of their experiences, inheritance and inner resources, and in spite of what has been implanted in them by education. A recent study (by Dr. Frank Wegener, as yet unpublished) has shown that American educators in general regard themselves as positivists (who believe that nothing exists but that which is immediately apprehended by the senses), whereas their actual conduct is that of idealists (by which they include thought and imagination as real). Such verbal distinctions should not distract us from the great quest: How can religion be made reasonable, by the use of those advances in science which are philosophically compatible with spirituality?

To get somewhere we need, first, a greater awakening all over the country, especially among scholars, to the possibilities in our present situation. Some, like Sorokin, Northrup, Coomaraswamy and Hocking, are already awakened, and they speak and write of the new situation with great hope. We need many more. But beyond this awakening is a task not for the individual, nor even for many hundreds of individuals. The job to be done can only be accomplished by unified and large-scale, organized effort.

This great enterprise is the systematic examination of the contents of all valid knowledge and significant experience (much of it lost to view, and much of it too recent to be as yet properly integrated into the body of knowledge), in order to draw off the really important conceptual elements, get them to stand out in proportion and order, and into the curriculum in the style they deserve.

As the object is to derive materials for teaching, the

results must be reasonable and have general application to all fields of study and to all walks of life. The product must be valid concepts. Nothing else will serve. But what do we mean by valid concepts?

There are two different approaches to the task of determining what man is, why he exists, what he does, and what life is all about.

One is by the study of cultures, world affairs, history, and the like. In general this is anthropology, philosophy, and so on. This means starting at the top of the hierarchy of subjects. [By hierarchy of subjects we mean the full content of a curriculum, which begins upon a broad base of those subjects which are most factual (the physical sciences), and goes on up through biology to those which deal with the factual, but from the standpoint of man's interrelationships (social sciences), and finally on to those fields of study which are farthest removed from immediate apprehension by the senses and therefore most speculative, but which are at the same time closest to man because a part of his life and experience (the humanities, philosophy, etc.)]

There is no doubt that work of this kind is of great value, and it should be encouraged right along. But it has serious weaknesses. Because it starts with the theoretical, in the end it involves arbitration of opinion, and hence incertitude. It also means that for agreement by all (including science) there would have to be a long wait, and even then no certainty of success. But the world cannot afford a long wait, particularly the West, which is threatened with self-destruction right now.

Another technique has recently become available, which is still so new that it has as yet been left unused. It is the reinterpretation of science, not as mere physicalism, but as the enlargement into space-time, which in its very principles demonstrates the possible reality of non-material existence. In this we have before us a field uniquely valuable, for it is one which is acceptable to science—because realistic, and because in fact discovered by science—yet vitally important to religion, because it establishes on a pragmatic basis a domain for those values which religion has always advanced. Within this domain the truths common to science and religion can be sought and found, since they can be demonstrated to be truths and not matters of opinion, such as individual writers thinking personally must be content with. But they will be so demonstrated only if a systematic search can be made for the meanings in the new domain of science, *in a joint enterprise such as exists nowhere as yet.* (The methods which can be employed for such a search are discussed in the January issue of MAIN CURRENTS in Modern Thought, to which the reader is referred, as they are too extensive for repetition here. They have been approached, but never quite realized, by a group of scholars which includes Jaeger, Sir D'Arcy Thompson, Matila Ghyka, du Noüy, and others.)

The task of identification of valid concepts, to say nothing of their re-evaluation in terms of total knowledge, will take the work of some fine scholars, well-organized (not too isolated), and fully financed. We

need experts in all fields, seeking common ground systematically, year after year. Such a program will not involve arbitration of opinion, hence it cannot easily fail, for with each step taken the common ground will become more firm, more interesting, and the vista more hopeful.

But most important of all, *such work will have immediate effect as soon as it is started*. Its products, unlike arbitration of opinion, go directly to teachers of teachers, to professors, *to the students*. It will serve to steady and encourage the country, just to know the work has started, and to see initial results.

Such work puts a solid foundation under religion, in the finest sense of the term. It will have world-wide effects, because it is universal and has the pragmatic sanction of science, as well as the contribution of art and philosophy. Study of this kind leads to an understanding of God as Law, so badly needed for ethics today. Because of its practicality, youth is roused to response. Moreover, it will have bearing on the breakdown of the family and every other social and historic issue of our times. We all know the importance of "law and order", but we speak here of no man-made law and sometimes misused order, but law as harmony in the universe. People long to know of this truth, which alone leads to freedom.

We are now ready for the question: How will this study restore the values of religion in the finest sense?

The supreme task of education, we repeat, is the heightening of man's humanity, not the increase of his animality, his irrationality, his confusion, his appetites, his will to domination and destruction.

The unique feature of this humanity in man, the

only element proper to education, is man's capacity to generalize situations, comprehend and apply laws, appreciate and live by principles.

This ability is expressed as concepts-in-use, after they have been shaped and possessed. Hence concepts are the central business of education for living. Words like love, health, beauty, are necessary generalizations. They can have no proper meaning for animals, because animals do not usually generalize. (Conversely, if we do not serve our future citizens with concepts we weaken their humanity by denying it its most important sustenance.)

This abstract, normative and hence ethical power of man is his unique feature, however it has come to be. In religion it is called the soul. But we are speaking now of a fact, not of beliefs. What does it mean to love your neighbor as yourself? That injunction is intended to lift our vision from the concrete individual, one's self, to the general, all men. "All men" is a concept. "My self" is at the level of a simple fact. The clue to our salvation lies in valid concepts. When the shift in science is used to move us conceptually as individuals and as a nation, out of physicalism, so that realism will be attributed to the much larger domain which lies within and around the appearance of things, then the place of religion will be secure once more.

Single institutions cannot do this job. They are too poor, and they do not as yet see the new dimensions; also their teachers are too busy. This is a special task. If we do no more than identify it, appreciate its necessity, understand something of its value, plan for it, speak of it, we shall have at least made a beginning on the most important, most urgent, and most hopeful duty which is before any group today.

## READING TOWARD CONCEPTS

We conclude herewith a discussion of books available for the purpose of re-orienting the reader to the point of view indicated by recent scientific developments, in the search for valid concepts which must be sought as a consequence of the increasing usefulness of space-time treatment of Nature. The reader is requested to keep in mind throughout the remarks made in our January issue. There is nothing finished in the present merely preliminary suggestions, which are intended to be provocative only, and limited to physics, biology, and psychology for the educated general reader, not the expert. F. L. K.

### An Example of Space-Time Properties

The splendor of the heavens affords us the most majestic latitude in both space and time. But the very immensity defeats our efforts to detect readily the scheme of things, except in the broadest fashion.

The difficulties do not arise from the vastness alone, but from the fact that we can only see the heavens. No other sense applies, except our gauging the warmth of the sun. In most experience, audible, tactual, and other information enters, but not here. In truth, the contributions of the other senses to terrestrial experience is likely to mislead us, for we unconsciously read back

inapplicable assumptions from habitual tactual, audible, and other correlates of vision into our seeing of the stars. We say popularly the heavens are cold and empty, the stars are hot and destructive, and silent in their courses. We read ourselves out of the heavens by all except one octave of one sense, and then misinterpret the experience.

Nevertheless, the optical channel has been wondrously used by astronomers. As we have seen, light is the constant upon which the whole system of present-day physical thought turns. Its meaning therein, as a constant, is prodigious. When we add the many meanings of spectrum analysis, and then the significance of chloro-

## A Reasoned Bibliography



phys1, to what light means as a constant in Relativity, we begin to appreciate the intricacy as well as the scale of the celestial glory. For though astronomy is not concerned with the celestial objects in terms of principles derived from other fields, we are so concerned if and when we discover that life is as much a revelation of space-time properties as is astronomy. The subtler meanings of light to biology and psychology can be rationally read back into astronomy, even though the heavens appear at first bare of such significance to the physical eye.

But such valid reading back of terrestrial experience into the celestial scene is far ahead of us. We have first to find out much more than we know as yet of the relation of space-time properties to all forms in Nature, and to all her processes.

As of today, we learn of four classes of celestial objects on different space and time scales, increasingly vast: The solar system, the Kapteyn Universe, the Milky way (our local galaxy), and the great series of other spiral nebulae in their totality.

The next most majestic range of space conjoined with time is geological study of the physical earth. Some remarks about this will be found in MAIN CURRENTS, October, 1944, pages 91-98. (We take opportunity to note an error on page 92, column 2, line 37, where Palaeo- occurs. It should be Protero- instead).

The earth being a local scene, all elements, life, energy, and human development, enter into the concepts required. We shall not here pursue the physics of this complex subject into its ramifications in geology, palaeontology, meteorology, and the like.

In chemistry, however, we have an opportunity to investigate locally and close at hand, indeed with experimental variations and controls, the material stuff of the universe. The harmonic and hierarchial order in the morphology and classification of the elements is summed up in their periodic table, which will be found centrally framed, with appropriate data and discussion, in any good college chemistry text: INTRODUCTION COLLEGE CHEMISTRY, Deming and Hendricks, Wiley, New York, 1942.

Better and most recent modifications arrange the elements according to their atomic structure (see *Journal of Chemical Education*, May, 1945, page 223). But a great deal of work, again, has to be done, this time upon the cosmological significance of the elements. For there are many ways to approach them for the deriving of concepts. The finest collection of studies known to us have been made by James Louttit, as yet unpublished. We may here make a few remarks about the usual periodic arrangement, merely to suggest one idea in reference to the space-time field.

The periodic table is based upon the octave principle, even in the case of the interpolated rare earth metals, a double sub-octave. Thus we see that the properties of matter under earthly conditions are regular functions of a fundamental order. This is shown in the horizontal component.

There is also the vertical component. In this we find significant evidence of *stages* of material densification which are assumed in most theory about planetary ori-

gins out of the solar system. As in stellar masses we conceive it proper to pass from the lightest as the earliest, to the heaviest elements as the latest. The heaviest are also unstable, in general, as if later and insecure variations on the basic theme.

1. There is a single octave of which only the extremes have been discovered by ordinary terrestrial observation: Hydrogen and Helium. This octave exploits the K orbit of electrons, one being present in Hydrogen and two in Helium.

2. Then come two single octaves, Lithium to Neon, and Sodium to Argon. In this fall additional elements so important to terrestrial structures, living and non-living: Carbon, Oxygen, Silicon, etc. These elements are fundamental in palaeontological science, as can be readily shown, and in the biology of today, as needs no demonstration. This group exploits the KL and KLM orbits of electrons.

3. The table now displays a double-octave structure, as if some vast cosmical event had occurred and is sharply registered: Potassium to Rubidium. This double-octave structure is the third stage of the table, and runs over three of the steps of the table. The last step is distinguished by the occurrence of the interpolated double-octave of the rare earth metals. Thus we may also say that the third stage involves three or, from another point of view, four double-octave steps, exploiting the MN, NO, and NOP orbits.

4. The table ends as if it were unfinished musical business, with the radio-active and unstable elements, of which Radium, Actinium, Thorium, and Uranium are best known. This exploits the OPQ orbits.

Thus the conspicuous facts of the octave system of the periodic table of the elements disclose a hierarchy of four stages.

Accompanying these vertical stages is a notable item. If we regard Hydrogen as a metal and Helium as a non-metal, we notice that each *line* (single octave) of the table thereafter contains one fewer of the non-metallic elements. Thus, in the second octave are two metals, Lithium and Beryllium, in the third there are three, Sodium, Magnesium, and Aluminum. The next row is the first of the double octaves, and it begins with an octave that is all metals, and the next four elements are also metals, and thus the non-metals are reduced to four, in this lot. So the table, regarded as the register of a series of cosmic and terrestrial transformations, replaces the majority rule of non-metals, until at 85 and 86 we are down to two, and can assume that if the OPQ series could be continued to the end, it would conclude with one non-metal, 104, and that the next octave would be all metals. One is tempted to suggest that the work of real space-time is nearly completed as regards its expression in matter.

Let us now recall that a peculiar feature of metals is their conductivity as to electricity, also that the relation of thermal and electric conductivity is close, and that the significance of thermal limits to life is great. We might regard the periodic table's series as something contrived in the space-time matrix, responding to the characteristics latent in that matrix as it evolves. The impacts or pressures of the superior causal source of properties has then been registered,

we observe, in four highly characterized stages, of which three are rounded out, and the fourth incomplete. Are these stages, then, not a record of space-time events on a cosmic scale?

If so, it may be fertile to hold in mind the idea that other cosmic space-time properties can be studied successfully if all the pertinent data in every department of physical science be brought into sharp focus. Such an inquiry will be a long and fascinating course of work, making opportunity for valuable doctorates in philosophy, seeking conformities and disagreements in the conspicuous elements of astronomy, geology, the chemistry of the non-living, meteorology, etc., as preliminaries to even more enriching generalizations embracing biology and psychology.

We shall return to these topics in MAIN CURRENTS from time to time. Meanwhile it may be suggested that in Physics the special object in reading is to realize (1) that the physical world is a thin veil over a deeper reality, (2) that the human mind can reach into this deeper reality to discover principles in common between human thought and feeling, and common *both* to that Nature apparent to our sensory equipment and the deeper universe appreciated by our intelligence, (3) that this deeper structure is now known to be in some sense a four-dimensional framework of operations, (4) that the four-dimensional (space-time) system Nature actually displays in her physical world goings-on has more resources than are used to explain phenomena in physics, (5) that a remarkably simple order can be detected in that structure, and (6) that the order in question is basically harmonic, resonant, musical, as documented by the finest contemporary established knowledge.

Serious students would do well to consult, as required, recent text books at college level for such subjects as have main bearing on the work in hand. In physics, for example, a general understanding of the nature and uses of the spectrum is important; some notions of the different kinds of motion studied in this science are desirable; the basic facts of the physical science treatment of sensory experiences are indispensable. In biology and in psychology similar fundamentals should be part of general knowledge.

For those who feel unequal to the task of immediate and complete intellectual self-uprooting, the well known works of Eddington and Jeans are useful enlightenment, particularly the former, whose technical writings include an effort to solve the problems of field physics by a geometry of points instead of by a geometry of lines of finite length. These explorations are reflected in his non-technical writings. We group together here some serious general discussions and a few popular books.

THE LOGIC OF MODERN PHYSICS, P. W. Bridgman, Macmillan, New York, 1927, provides the exact identification required from a physicist of the *operational* concepts of space, time, causality, identity, velocity, force and mass, energy, thermo-dynamics, electricity, light, rotational motion, and of quanta, required (at that date) from that domain for over-all thinking.

THE ANATOMY OF SCIENCE, Gilbert N. Lewis, Yale, New Haven, 1926, discusses much the same field but provides exact knowledge of the critical decisions about the geometry ascribed to nature by relativity.

THE NATURE OF THE PHYSICAL WORLD, A. S. Eddington, Cambridge, 1928.

THE BASES OF MODERN SCIENCE, J. W. N. Sullivan, London, 1928, New York, 1929.

THE MECHANISM OF NATURE, E. N. Da C. Andrade, London, 1930.

THE EVOLUTION OF SCIENTIFIC THOUGHT FROM NEWTON TO EINSTEIN, A. D'Abro, New York, 1927.

NEW PATHWAYS IN SCIENCE, A. S. Eddington, Macmillan, New York, 1935.

THE PHILOSOPHY OF PHYSICAL SCIENCE, A. S. Eddington, Macmillan, New York, 1939.

THE MYSTERIOUS UNIVERSE, James Jeans, Macmillan, New York, 1938.

THE NEW BACKGROUND OF SCIENCE, James Jeans Macmillan, New York, 1933.

THROUGH SPACE AND TIME, James Jeans, Cambridge University Press, 1934.

AN ORIENTATION IN SCIENCE, Watkeys and Asso., McGraw-Hill, New York, 1938.

MAN AND HIS PHYSICAL WORLD, Dwight E. Gray, D. Van Nostrand, New York, 1942.

MATTER, MOTION AND ELECTRICITY, Smythe & Ufford, McGraw-Hill, New York, 1939.

PHYSICS, THE PIONEER SCIENCE, Lloyd W. Taylor, Houghton Mifflin, New York, 1941.

MATTER, ENERGY AND RADIATION, Dunning & Paxton, McGraw-Hill, New York, 1941.

MR. TOMPKINS EXPLORES THE ATOM, G. Gamow, Macmillan, New York, 1944.

GRAMMAR OF SCIENCE, Karl Pearson, E. P. Dutton, New York, 1937.

THE HISTORY OF SCIENCE, Sir William Dampier, Macmillan, New York, 1932.

TREASURY OF SCIENCE, Harlow Shapley, Harper, New York, 1946.

DEVELOPMENT OF PHYSICAL THOUGHT, Loeb and Adams, John Wiley, New York, 1933.

ASTRONOMY, Russell, Dugan and Stewart, 2 vols., Boston, 1926, 1927.

STELLAR MOVEMENTS AND THE STRUCTURE OF THE UNIVERSE, A. S. Eddington, London, 1914.

This work is for mathematical readers; so is also the same author's THE INTERNAL CONSTITUTION OF THE STARS, Cambridge, 1926.

A SOURCE BOOK OF ASTRONOMY, H. Shapley and H. E. Howarth, New York, 1929.

## CRITICAL EVENTS IN BIOLOGY &

### Notes on the Field

The above assignment of conceptual responsibilities to physics leaves a very small local residue of matter and structures which turn out to be extremely puzzling until one applies new standards to it: the so-called biosphere of terrestrial life, really a thin shell, an envelope a few hundred feet thick over the earth's solid body of 8,000 miles diameter. If we assign the

magma and crust of the earth, the air, the meteorological shell (atmosphere and higher ionized states) and astronomical objects to physics we are left with a film of living molars, scarcely more than a delicate web of life. The most highly organized of living creatures, such as trees and mammals, form a biological tissue in thickness approximately a five- or ten-thousandth the diameter of the material earth and its electromagnetic extension.

This is truly a mere bubble. It is not only thin, but far from dense, even in its mid-most lamination at and close to sea level. Human beings, domestic animals, wild animals, fishes, birds, insects and the rest of it thin out steeply into the crust and deep seas, and more steeply upward. This mass *in space* is of little consequence, but as a continuum *in time* it is very remarkable indeed, an epithelial membrane. What is it which holds the film together through the millenia? Whence originate the wonderful variety and beauty of its individual forms? What real world is revealed herein, as "passage of time"? How is this terrestrial life-bubble related to that other film, the photosphere of the sun?

It has been tempting to think of and treat living organisms as if they were non-living. A living cow weighs so much, has a certain average density, displays a certain electro-potential, while alive. But all this by itself is physics and certainly (except the last item) is not very important to biology, if biology is to result in good new generalizations (to be "explained"), and hence elucidate the special subject matter which eludes physics. If we desire to describe the universe fully, we must admit the existence of a science which concerns itself with the relation of irritability, sentience (and conductivity), and mind (with co-ordinate organization and purposeful mobility) to certain self-perpetuating, evolving forms.

These forms are not describable effectively in statistical terms. They display a curious feature, *self*. They are self-forming, self-perpetuating, and may be self-moving. Living individuality has invariable form, behavior, and functions amounting (subject to evolution) to an absolute, and certainly has no random or average character primarily. Cows do not give birth to calves on the average, to fawns every few years, and lambs now and then. Their other habits are highly characteristic. They do not jump over the moon. The printed accounts of this phenomenon have been widely discredited.

Biology is thus a science no less if not more important conceptually today than physics, because it undertakes to systematize and generalize phenomena of as intense significance to time and some subtleties of space, as those studied in physics are to space and some aspects of time. That biology has not been attending to its business of principal import to philosophy is unfortunate, but this omission can be remedied. It may first be defined.

The materials of biology surely have no conceptual meaning separated from irritability, sentience, and mind. Attempts to understand these three attributes of the living in three-dimensional physical terms have been unfruitful. Hence biology has remained a good deal at the descriptive level as regards its special subject-matter,

and has tended to submit to the conceptual claims of the physicists.

Such submission is a failure to see that aesthetic emotion and intuition of truth are not less than co-equal with measurement and logic, even for understanding, let alone living. We have only to consider what the world would be like if one could observe it devoid of living creatures, a true desert, not even an insect or aerobe, and of course no human, a dead world, insensate and without those meanings we first see in life and then sense in or transfer to the physical environment by means subtle and innumerable. In truth, it is utterly impossible to imagine what one would experience, if one could look upon a lifeless planet, because we can only look through a living organism, our self.

To describe life in terms of four dimensions, it is necessary to collect and examine instances of cyclism, metamorphosis, time-lag in embryological development, and the like. In Nature these in some cases correlate with solar events which can be simulated in the laboratory, as when light is artificially supplied to plants. But other time-cycles have deeper meaning, as when the phases of the moon are registered in the electropotential of a tree. We might call the merely repetitive cycles of astronomy revolutions and the biological cycles evolutions, great and small, with reference to the remarkable transformations which result in such cases as metamorphosis, especially.

Critical events in biology attended the discovery that these living cycles root in minute structures called chromosomes, in the sense that continuity in time is ensured through them. They are thus the geometric determinants or agencies, of molecular dimensions, which continue specific forms in time as crystal ions and space lattices are specific in that kingdom. The living cell is hence considered an aperiodic crystal, and the parallel between evolution and genes in biology, and celestial revolutions and atoms in physics is close. But note that an entirely new philosophical entity comes into the picture now, *function*, linked with specific form persistent and self-adjusting in time, and associated with irritability, sentience, and mind. We know of function directly in mankind, and the fact that many afflictions have no organic disturbance as their seat but arise in emotions and result in physical disorder has given rise to the belief that psyche and soma are parallels. Our purpose is to create a psycho-biology which can be traced down the hierarchy of kingdoms from mammals through plants to crystals, inquiring how the *form* elements come from the space-potential and the *function* elements are related to the time sector. The purpose is to disburden the study of human psychology and physiology of the immense and unmanageable load thrown upon them by having nothing clearly conceived about life functions where they first appear, in lowly estate.

The proposal involves a conceptual partition in chemistry, assigning not merely organic chemistry but all forms of this subject not strictly physical chemistry to a place where specificity of form and property in chemical elements is seen as the beginnings for form and function in living organisms. In this way we can see more closely the apparent bifurcation of the primordial into life and matter in the heart of Nature, in



preparation for understanding the apparent bifurcation into life and consciousness. When we thus look deeply enough into the body of knowledge shaped along conceptual lines, we may at last be able to understand on good terms, retaining values and beauty, that there really is no bifurcation whatsoever.

The creation of a biological psychosomatics as a preliminary to understanding body and psyche in mankind implies an understanding of the relation of four dimensions to three, now in relation to life. For growth and form thus understood mean that phenotype and genotype are understood. This cannot be done through studies of sequence alone. By simple analogy we understand that it is impossible really to interpret duration from sequence. For instance, a cube gives us the property of volume which cannot be built up by adding planes which have no thickness. No matter how many times one looks at a plane no sense of volume arises. Similarly, watching the growth of a seed to maturity in the plant does not reveal the space-time reality, but just a series of forms in time sequence. To solve this problem there is a mathematical technique to be applied. Measurement along a line is said to be scalar. By attributing a force to the length of the line and a force to another line, we can determine the direction and amount of force applied upon another line called the resultant. This brings surfaces into play, actually. This is called the study of vectors. A further stage has opened in mathematics, the study of surface forces treated so that they will lead on to forces in a mass or three-dimensional volume. The system is now called a tensor. The step to the four-dimensional matrix is analogous.

In the case of biology the shift from scalar, to vector, to tensor, to matrix has to be taken with irritability, sentience, and mind consistently in view. Somewhere between the centrosymmetrical crystal and the linear-symmetrical plant, low-level response comes into play. Between plant and animal, sentience is translated into mind, as line symmetries give way to bilateral symmetries. Applying proper techniques to this sequence, there is every reason to have confidence that we can at last break entirely out of the confinement to physical-level thinking, taking the living content with us along with the mathematical skeleton. The accumulation of mathematical studies in biology is now considerable, but they are almost entirely confined to three-dimensional treatment. Sir D'Arcy Thompson at last re-issued his classic work, *On Growth and Form*, in 1942, after it had been out of print twenty-five years. No reference is made in this revised form to the space-time polytopes which unravel the entrancing mysteries of nature he has so uniquely recorded.

We repeat: The mere addition of time-lapse to morphology is not enough. We anticipate a biometrics parallel to the space-time metrics of physics; but if they are to be meaningful they must have constant reference to the psychic content of life. By discussing human psychology in this connection (in the next section of reading), a little further understanding of the requirements for this enriched biology might be indicated, although the whole operation proposed is a really formidable task, requiring a large body of collaborators and steady application.

*In Biology* the object in reading is to realize that the harmonic order referred to under physics, now appears, in living kingdoms, with new opulence and subtlety as chromosomes, genes, cell shapes, tissues, organs, biomes; as time-and-volume variations in development, as cycles, and (of superior importance to the general observer for our purposes) as form and function and hence as systematics, which is to say order as taxonomy and classification; and that a new ingredient has appeared: self-formation (crystals), sentience (plants), and mind (animals). Just as effective knowledge of contemporary physics requires resolute pursuit of fact, law, truth, concerning certain aspects of the underlying order, so also in the case of biology these are necessary, but now at a higher level of harmonic order, and with the addition of beauty, feeling, and meaning, because here appear self-formation determined by space-time lattices, self-perpetuations, and purposeful self-mobility. In biology understanding is impossible without some concept of self in contemporary space-time (transcendental realistic) terms of reference.

The undernoted books are of direct value for our purposes. Other works will be mentioned when we deal with the section of reading concerning the theory of harmonics. We have already referred to Erwin Schrodinger's little book, *What is Life?* (Macmillan, New York, 1945) For like reasons the writings of Gustaf Stromberg are also important. The author is a physicist, but he is addressing himself to establishing reasoning which will bring genetic principles, sensory experience, and other living devices into an area of thought common with material science. A volume of collected papers by Dr. Stromberg will appear shortly, from David McKay, Philadelphia. Among biologists, the studies of H. S. Burr of Yale University and the writings of Joseph Needham rank high, for our purposes, and the guidance of E. S. Russell is nearly indispensable.

ON GROWTH AND FORM, D'Arcy W. Thompson, Macmillan, New York, 1942.

THE CURVES OF LIFE, T. A. Cook, Holt, New York, 1914.

AN INTRODUCTION TO MATHEMATICAL GENETICS, Launcelot Hogben, Norton, New York, 1946.

ELEMENTS OF PHYSICAL BIOLOGY, Alfred J. Lotka, Williams & Wilkins, Baltimore, 1925.

GENERAL BIOLOGY AND THE PHILOSOPHY OF ORGANISM, R. S. Lillie, University of Chicago Press, 1945.

LIFE—OUTLINES OF GENERAL BIOLOGY, J. Arthur Thomson and Patrick Geddes, 2 vols., Harper, New York, 1931.

BOTANY OF THE LIVING PLANT, F. O. Bower, Macmillan, London, 1939.

THE STUDY OF LIVING THINGS, E. S. Russell, Methuen, London, 1924.

BIOLOGICAL TIME, Lecompte Du Nouy.

HUMAN DESTINY, Lecompte Du Nouy, Longmans Green, New York & London, 1947.

THIS IS OUR WORLD, Paul B. Sears, University of Oklahoma Press, 1937. This deals with life and its environment. Written in the simplest style, understandable, simple, without veneer or pretense and humbly philosophical.

- MAN AND HIS BIOLOGICAL WORLD, Frank Covert Jean, Colorado State College of Education, 1944, Ginn & Co., Props., Boston. The authors (Jean. Harrah, Herman & Powers) are aspiring to an educational philosophy by cutting across the sciences in order to achieve larger life values.
- ESSAYS ON PHILOSOPHIC BIOLOGY, Wheeler, Harvard Univ. Press, Cambridge, 1939.
- THE BIOLOGY OF THE CELL SURFACE, E. E. Just, P. Blakiston's Sons, Philadelphia, 1939.
- ORDER AND LIFE, Joseph Needham, Yale Univ. Press, New Haven, 1936.
- THE DIRECTIVENESS OF ORGANIC ACTIVITIES, E. S. Russell, Cambridge, at the University Press, 1945.
- WHAT IS LIFE, Augusta Gaskill, Charles C. Thomas, Springfield, Ill., 1928.
- ANIMAL ECOLOGY, Charles Elton, Oxford Univ. Press, New York, 1930.
- THIS LIVING WORLD, Clark and Hall, McGraw-Hill, New York & London, 1940.
- THE BIOLOGICAL BASIS OF INDIVIDUALITY, Leo Loeb, Charles C. Thomas, Springfield, Ill., 1945.
- ANIMAL LIFE AND SOCIAL GROWTH, W. C. Allee, William & Wilkins, Baltimore, 1932.
- ANIMAL BIOLOGY, J. B. S. Haldane & J. S. Huxley, Clarendon Press, Oxford, 1927.
- FOUNDATIONS OF BIOLOGY, L. L. Woodruff, 6th ed., Macmillan, New York, 1941.
- EVERYDAY BIOLOGY, J. Arthur Thomson, Geo. H. Doran, New York, 1924.
- OUTLINES OF EVOLUTIONARY BIOLOGY, A Dendy, revised ed., Constable, London, 1923.
- THE INTERPRETATION OF DEVELOPMENT AND HEREDITY—A Study in Biological Method, E. S. Russell, Clarendon Press, Oxford, 1930.
- THE NATURE OF LIVING MATTER, L. Hogben, K. Paul, Trench, Trubner, London, 1930.
- THE GENETICS OF SEXUALITY IN ANIMALS, F. A. E. Crew, Cambridge University Press, 1927.
- THE FEMALE SEX-HORMONE, R. T. Frank, C. C. Thomas, Springfield, Ill., 1929.
- THE MECHANISM AND PHYSIOLOGY OF SEX DETERMINATION, R. Goldschmidt, Methuen, London, 1923.
- KORPER UND KEIZELLEN, J. W. Harms, J. Springer, Berlin, 1926.
- THE INTERNAL SECRETIONS OF THE SEX-GLANDS, A. Lipschutz, W. Heffer & Sons, Cambridge, 1924.

## PSYCHOLOGY, and Notes on this Field

Just as physics leaves to biology a residue for special consideration, so biology in turn is conceptually unequal to the task of framing a third residuum, and thus we have a new science, psychology. The separate history of this subject is only about as old as the intellectual revolution, hence most of its content is of direct value to our present purposes.

The border between biology and psychology has until lately been without sharp definition, so a brief reference to this is necessary.

Self, together with the seriatim appearance of irritability, sentience and mind, we have said are basic to biology. If chemistry be conceptually re-organized conformably to new demands, it becomes possible to trace self down the hierarchy of life and form into that something in atoms which fore-shadows self. In the opposite direction self continues into the human kingdom, along with mind and its fore-runners.

But we observe a sharp edge in the transition. Man displays a capacity to examine portions of self, much as he can examine matter. In fact, biological-psychological self is the object of immediate awareness, and so-called lifeless matter is studied at at least one remove.

Furthermore, associated with this unique attribute of self-consciousness is a variety of new psychic activities, some quite original with man, and others mere re-arrangements of parts of self-displayed by higher animals. Recollection and anticipation are genuine advances over mere associational memory in animals. There is also a re-organization of the mammalian structure, with upright carriage, the opposed thumb and deft hand, the several uses of the voice, development of the forebrain and nervous system, and so on to the making of tools. Here is a significant complex. For though Kohler's work shows us that some primates can use simple tools, the objectivity to self and to its work required to make and to perfect tools is not present in any other species than ourselves. All this is alphabetical in the science of man and should be primary in psychology.

Self-consciousness, the critical event in evolution which is associated with all this, is connected with the relation man has with time, and displays a new time-related feature, namely, continuity of identity. In physics time may be recorded in random occurrences, if we care so to think, in spite of what has lately happened in that science. In biology time is ordered or connected with events of order, accretion, growth, and purposeful mobility (the order here being meaningfulness). With man appears a sense of duration. He has history, planning, fore-knowledge of Nature's activities. Thus we find in biology and in human psychology those second and third degrees of freedom implied by free motion in three dimensions. We are warranted to confirm and enabled to explore three dimensions of time fore-shadowed by physics.

Questions peculiar to psychology, therefore, have to do first of all with consciousness; and that will turn out to be something well described by the American phrase, a tough assignment. A little less difficult are the questions which have to do with the re-arrangements of mammalian psyche and additions of new features in man. A distinction can well be made here between the natural psyche (in Freud's sense), and the human soul (in Plato's sense). Traces of these peculiar evolutionary events must also be expected and indeed are seen in physical re-arrangements in man of the mammalian structure. Whatever comes out of the latter search, we can fully assent to the continuance over into man of the psychic activities in animals which are associated with reproduction and the vital urge, the herd instinct, and personal mentality. (Perhaps a full assent to this would help us to prevent these natural features becom-

ing neuroses and psychoses of the sex, herd, and ego complexes).

All this Freudian animality is foreground to consciousness, even when walled off as the repressed or deep unconscious. Man, upon evolving and in the process of evolving, takes over a psychic organization, just as he takes over bodily organs from the mammalia. But several things happen to both. As he can be objective to his psyche, he can and he does perfect this primary apparatus in the psyche, just as he can and does walk erect and does develop his body by conscious intelligent living in fresh air, right food, abstemiousness, if he cares to. A good case can be made for his increasing inability or not caring as a concomitant of the ascendancy of behaviourism.

*But besides these new uses of old devices, much more happens with and in man.*

The psychological studies with started with von Ehrenfels and are now called Gestalt Psychology contain several independent important gains. If the student will study the event called closure, in himself, he will see that consciousness is deeper than volition, and deeper also than the experience called meaning. (See MAIN CURRENTS, January, 1944, page 5, for a familiar instance of closure experiment). Independent and direct interpretation of this shrewd experiment shows us that without change of sense data, we can observe volition altering meaning, and we can even detect an energy content in the shift of meaning. It has appreciable force as it moves over. Having experienced that, now add our daily experience of our feelings, vital tone, bodily state, and we are compelled by simple fact to say that human consciousness has before it, stretching out to the physical world, a hierarchy of experiences, body, psyche, and soul, besides the experienter himself. Body and psyche are shared with animals, but re-arranged. At all levels, portions of this complex are within reach of

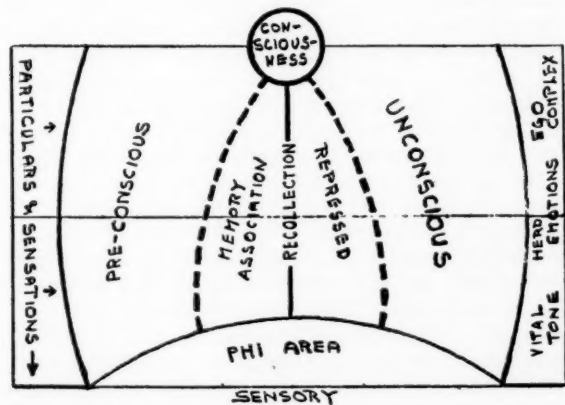


FIGURE 1

Freud's well known "structural relations within the mental personality" (*New Introductory Lectures on Psycho-Analysis*, p. 111) re-arranged so that the physical system (denominated Phi area and sensory, above) is shown in contact with pre-conscious, associative functions, repressed, and unconscious, and the complexes arranged in a vertical hierarchy, the "most mental" one (ego complex) most remote from the sensory system, and the whole treated merely as a unitary system capable of maintaining a "steady state", displaying no features not admitted by behavioral psychology. Lateral connections with the environment both ways, through pre-conscious (or perceptual conscious) and through unconscious are suggested to account for lower levels in parapsychology, a subject which requires reexamination in terms of the whole literature.

recollection, and portions are not. At the bodily level, the major activities go on unnoticed. In the psyche some are quite beyond all observation by the individual himself, though they may affect or determine his behaviour. The relation of Platonic soul to consciousness is to be examined later.

We may accommodate this part of the Gestalt gains with the Freudian discoveries in a single diagram, Figure 1, in which we put the unconscious at one side and the foreconscious content on the other, with the partition of associational memory, recollection, and repression between, serving to communicate and to separate. This is an accommodation of Freud's anatomy of the mind. (See cover of MAIN CURRENTS, July, 1946, for Freud's diagram). In the present arrangement, Figure 1, we represent consciousness as a circle, perhaps it should be a point, having communication with the perceptual field, but cut off from the encysted unconscious. The horizontal lines are intended to suggest the hierarchy of meaning, emotion, etc., outward from consciousness.

In addition to all the foregoing, there is a class of experiences which have either been lost to view entirely or, when discussed, are often treated indecisively or regarded as pathological. It is one of the known historical afflictions of depth psychology that much of it arose from the study of sick people or criminals. Such habituation made fatally easy to dismiss all variations from some artificial norm as disease. For some the extrovert became the ideal, and the term introvert a reproach. The extroverts having brought us where we are, their stock is a little low. In truth, associated with consciousness is a capacity for abstractions, for self-development, universals, generalization good and bad, intuition, imagination, ethical feelings larger than tribal or family contexts, delicate aesthetic experiences, deep satisfactions not necessarily egotistical connected with effective mathematical work, religious experiences, mysticism of nature, phenomena which are classed under the head of parapsychology, and the like, much of it of high import to the healthy unusual individual and to society.

These matters more than any other require re-examination in today's enlarged framework of thought. This kind of question is put in review exercises in general psychology: "Why can there be no knowledge without sensory experience?" It would be well to remember that an opposite question is invariably implied and should be stated: "What is the nature of humanity that the individual can learn to respond and to perform as he does when he learns through the same sensory experiences as mammalia generally?" We are getting constantly closer to answers to both these questions, but the second requires special consideration because it refers really to the abstract or universal.

It is here that the second important contribution from Gestalt studies comes into play. For it is shown that man has this sense of the whole. (It is significant that detection of this capacity for generalization, and recognition of the particular in the class, began with the study of music). At any rate it is quite improper to speak of general psychology and the anatomy of the mind today without including these well-established data. We



might suggest what is involved by adding a new part to the previous figure.

In Figure 2 we group near consciousness terms suggesting important experiences which lie, as it were, not before but around consciousness, not well within focus, somewhat elusive to volitional control; and even resources in man which lie right behind consciousness, as we know it in ordinary life. The suggestion is that the Id of psycho-analysis reaches from the unconscious, the particular, and the habitual, to the unnoticed general and new. Likewise the Super-Ego may trade with the perceptual conscious in the foreground and also with the (now somewhat noticed) general or abstract aspects of mind. Consciousness operating toward the source (upward in the figure) may be considered as peering homeward through intuition, and operating toward physical experience or particulars in the mind, downward in the figure. As to the horizontal, we cannot,

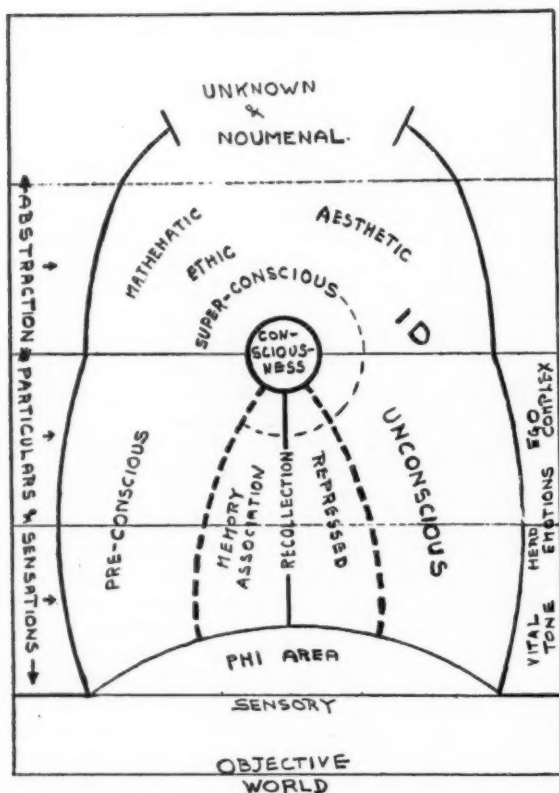


FIGURE 2

The lower half is identical with Fig. 1. Above consciousness has been added a range of unknown extent to the hierarchy of human functions. The individual is now described as being capable of functioning in a domain more abstract (of higher dimension) than the world of particulars known to personal life taken in behavioral terms alone. The multi-dimensional universe is implied. The upper level of the human constitution may be conceived as trading with greater dimensionality and hence the relatively less divided. At this level, of concepts, he is therefore individual. But individual requires a mechanism for expression in more limited dimensions, hence personality, literally mask. All these terms are in use in different schools of psychology. But we would go further and suggest that there is an environment at these levels, and exchange with it, even less well focussed and more damped down than extra sensory perception. Lateral trading with the conceptual dimension may be independent of the connection with still higher resources suggested by leaving the enclosing arc open at the top, whereby something opposite to sensory experience is provided for in the diagram.

in the face of parapsychology facts, wall man off from his psychic environment any more than from his physical circumstances, so we here suggest that we consider soul (in Plato's sense) as a speculum to Nature deeply buried where universals are at work, just as psyche is in touch with its own environment of particulars.

On these topics, and in the general healthy proportions of human nature as a whole, a great deal of work has to be done—likely to be done well only after the steps we described in reference to physics and biology have been taken.

Much re-evaluation is required in the study of our senses, as well. The senses are ordered on scales, as we see clearly in hearing, and in sight. Our account of touch, taste, and smell is less clear, but progress is being made. (See Hoisington, page 33). The mind may be as imperfectly ordered as the senses, which operate like poorly spaced grids through which we perceive partial reports of the natural order.

In our studies, in short, we are proposing that it can be shown that man stands midway between the space-time light, and matter, the earthly condensation thereof; that his intuitions look homeward and his intellect looks earthward; that these two are the polar ends of the intelligible principle, insight, or soul, closer in at the heart of things than is the Freudian psyche; that in the ill-formed and defeated individual the psychic conflict is increased by a system of learning which informs the student of a few of the earthly partials of nature but denies him the education in principles which would awaken in him the warm glow of inner confidence. Even if surgical, medical, psychiatric, psycho-analytic, institutional, and every other remedial measure were made available by concentrating expenditures on them instead of on wars, we would still have to feed the intelligible soul so that it can inform the psyche confused by the kind of motion pictures, newspapers, and radio comics we now turn loose on youth. The educational system alone can supply useful knowledge of the principles or universals, and it will only simplify and not complicate its labors when it communicates information and skills in an atmosphere of conceptual integration. Conceptual integration means fusion replacing confusion among the arts, philosophies, religions, and sciences; and since the products of these disciplines are ejects from the nature of man, the process parallel to the external unifying of the disciplines is the discovery and assent to an inner organic unity of those features of the human make-up from which the cultural moods do the ejecting into the stream of history. Let us believe that it can be shown that, at their lowest levels (though all trade with the creative source) the disciplines are associated in a manner of peculiar significance to emotion (art), concrete mind (science), abstract mind (philosophy) and intuition of the good (religion): that this cultural apparatus is the heart of the human inner organism up to this point of evolution. No doubt between this cultural centrism and its outward expression lies the veil of vital and physical existence through which the inner wealth has to come. But equally it may be that *beyond* the cultural nexus in which the four disciplines root is a veil of another kind, now between

man and ultimates, or God. The good life must consist in piercing both veils. The thrust must be two-way.

But a practical problem is involved for the educator: We are strong, as a species, in art and science, because these are at the concrete level of experience in most practitioners. On the other hand, at present man is weak at the philosophical and religious levels, because these positively require abstract or generalized or universal applications. Art and science would be the better for such universality, but they can get along somehow with little of it. In religion, however, love of all mankind is the clue, not love of self, a few, a family, to exclusion. In philosophy the indispensability of generalized or over-all thinking is quite obvious. As we are only half-evolved creatures, we are pretty good at the concrete, and poor at the abstract levels.

Furthermore, the school system has deprived itself of good (comparative) religion and, indeed, of most religion. It is also disastrously deficient in active, workable, not overly speculative philosophy. This miserable deprivation and general bankruptcy is pointed up all the more powerfully by the way in which we magnify one or two names, such as that of Dewey, splendid as may be that connotation and his achievement. We have to get straightened up on comparative religion and comparative philosophy, and also modernized in both, and then we can tackle the two veils; we can press through and help the student to press through both ways. Outwardly or extrovertly a really good and worthwhile life can come if it be lived securely against a rich background of abstract mind principles and intuitions of the good life made lively and real. And by the same achievement we shall come to penetrate inwardly or introvertly to the rich creative resource. To get access to this, a well-organised (comparative) philosophy and religion are essentials.

It should be quite obvious that such an enterprise is hopeless unless some general agreement can be had as to the constitution of the individual in something like adequacy. The more exact and comprehensive we can make our agreement, the better for the educational system.

In *Psychology* we may say, in sum, that the object of the reader should be to arrive at a clear appreciation of the significance of the several major developments in this comparatively young science, and to try to understand these developments in an atmosphere free from the implications of the physicalism which dominated western minds throughout most of the brief history of this young science. If studies we suggest in Physics and in Biology precede the reading in Psychology such historical freedom of judgment is more easily attained. Nevertheless, self-conscious efforts must be made to be alive to the basic elements. The books suggested will themselves describe the various aspects of the subject, such as introspective psychology, measurement psychology, and the like. All are important, but for our purposes emphasis must be placed upon the psychology of the unconscious (depth psychology, in general), which documents fully the identity of a certain (and, behaviorally; a very large) part of human nature with the psychology of non-human creatures, especially mammalia; and upon experimental materials collected in

Gestalt Psychology, which document high-level and conscious activities, meaning, and the like. Hence, the reader is urged to examine an experience such as closure for himself, making efforts to evaluate all of this in the new atmosphere required by modern thought. In addition some acquaintance with parapsychology is necessary.

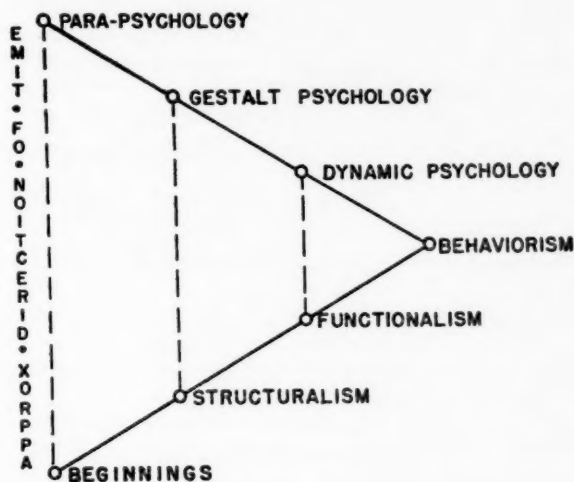


FIGURE 3

Above is suggested a relation in fundamental similarities between branches of psychology, displaying cyclism in historical development. Time lapse is vertically upward. It is realized that the treatment is necessarily over-simplified. We owe this provocative study to Viggo Westergaard, who suggests that we may regard behaviorism as the nadir in the history of psychology, denying mind flatly. The cycle begins, of course, with the separate history of psychology as a science, passes on to structuralism, functionalism, and so on, to full round in parapsychology. The corresponding points in the cycle are linked (by the dash lines), and represent the following resemblances: Functionalism and dynamic psychology share a pre-occupation with "operation", the former emphasizing flow of conscious experience in its natural environments, using verified introspection and biological investigation as methods. The latter is concerned with "whole processes", following unfoldment from cause to effect and using mental tests. Structuralism and Gestalt psychology have interests which meet in the part-whole problem, the former maintaining that parts are primary and wholes are built from them. The latter reverses the emphasis. Finally the initiating of psychology as a science is seen in the labors of Fechner, Lotze and Wundt in determining priority for mind in the study of mind and action. In the case of Wundt we see considerable dependence upon introspection. A curious and significant return to the original problems is seen at a higher level now, in parapsychology. The introspective element in parapsychology is indispensable, our only report is from the percipient's self-examination in extra-sensory perception. Mr. Westergaard's interesting suggestion indicates that we are on the threshold of a truly remarkable period in psychology.

## HISTORIES OF PSYCHOLOGY

- HISTORY OF PSYCHOLOGY, J. M. Baldwin, Putnam, New York, 1913.
- A HISTORY OF PSYCHOLOGY, G. W. Brett, 3 vols., G. Allen, London, 1921.
- A HISTORICAL INTRODUCTION TO MODERN PSYCHOLOGY, G. Murphy, Harcourt Brace, New York, 1929.
- A HISTORY OF EXPERIMENTAL PSYCHOLOGY, E. G. Boring, Century, London & New York, 1929.
- SENSATION AND PERCEPTION IN THE HISTORY OF EXPERIMENTAL PSYCHOLOGY, E. G. Boring, Appleton-Century, New York, 1942.
- SEVEN PSYCHOLOGIES, Edna Heidebreder, Century, New York, 1933.

For psychological terms and definitions the reader may consult:

- DICTIONARY OF PHILOSOPHY AND PSYCHOLOGY, J. M. Baldwin, Macmillan, New York, 1901-5.

## GENERAL PSYCHOLOGY AND PHILOSOPHY OF PSYCHOLOGY

- TOWARD A DIMENSIONAL REALISM, Charles M. Perry, University of Oklahoma Press, 1939.
- PRINCIPLES OF PSYCHOLOGY, W. James, Holt, New York, 1931.
- AN OUTLINE OF PSYCHOLOGY, W. M. Dougall, Scribner's, New York, 1929.
- PSYCHOLOGICAL PRINCIPLES, J. Ward, 2d ed., University Press, Cambridge, 1920.
- A HISTORY OF PHILOSOPHY, W. Windelband, (tr. Tufts), 2d ed. rev. and enlarged, Macmillan, London and New York, 1901.
- PSYCHOLOGY, GENERAL & APPLIED, L. B. Hoisington, Edwards Bros., Ann Arbor, 1946.
- PSYCHOLOGY—A STUDY OF MENTAL LIFE, R. S. Woodworth, Holt, New York, 1923.
- A FIRST BOOK IN PSYCHOLOGY, M. W. Calkins, 4th rev. e., Macmillan, New York, 1914.
- PSYCHOLOGY, GENERAL AND APPLIED, L. B. Hoisington, Edwards Bros., Ann Arbor, 1946.
- AN OUTLINE OF GENERAL PSYCHOLOGY, Douglas Fryer and Erwin R. Henry, rev. ed., Barnes & Noble, New York, 1943.

## ASSOCIATIONISM

- A TREATISE ON HUMAN NATURE, D. Hume, (Ed. Selfy-Bigge), Clarendon Press, Oxford, 1896.
- PRINCIPLES OF PSYCHOLOGY, Herbert Spencer, D. Appleton, New York, 1914.

## BEHAVIORISM

- CONDITIONED REFLEXES, I. O. Pavlov, (tr. Anrep), Oxford Univ. Press, London, 1927.
- PSYCHOLOGY FROM THE STANDPOINT OF A BEHAVIORIST, J. B. Watson, 3d rev. ed., Lippincott, Philadelphia, 1929.
- BEHAVIOR: AN INTRODUCTION TO COMPARATIVE PSYCHOLOGY, J. B. Watson, Holt, New York, 1914.

## COMPARATIVE PSYCHOLOGY—ANIMAL

- BEHAVIOR OF THE LOWER ORGANISMS, H. S. Jennings, Columbia Univ. Press, New York, 1906.
- THE MENTALITY OF APES, W. Kohler, (tr. Winter), Harcourt Brace, New York, 1926.
- AN INTRODUCTION TO COMPARATIVE PSYCHOLOGY, C. Lloyd Morgan, W. Scott, London, 1894.
- ALMOST HUMAN, R. M. Yerkes, Century, New York, 1925.

## COMPARATIVE PSYCHOLOGY—CHILD

- THE PSYCHOLOGY OF CHILDHOOD, N. S. S. Whitley, rev. ed., Macmillan, New York, 1933.
- PSYCHOLOGY OF EARLY CHILDHOOD, W. Stern, (tr. Barwell), Holt, New York, 1930.

## EXPERIMENTAL PSYCHOLOGY

- A TEXT-BOOK OF EXPERIMENTAL PSYCHOLOGY, Myers & Bartlett, 2 vols., 3d. ed., Cambridge Univ. Press, 1925.
- PRINCIPLES OF EXPERIMENTAL PSYCHOLOGY, H. Pieron, (tr. Miner), Harcourt Brace, New York, 1929.
- EXPERIMENTAL PSYCHOLOGY, Dr. W. Woodworth, Holt, New York, 1938.
- EXPERIMENTAL PSYCHOLOGY, E. B. Titchener, Macmillan, New York, 1901-5.
- MANUAL OF MENTAL AND PHYSICAL TESTS, G. M. Whipple, 2d ed. rev. and enlarged, Warwick and York, Baltimore, 1914-15.

## "GESTALT" PSYCHOLOGY

- GESTALT PSYCHOLOGY, W. Kohler, Liveright, New York, 1929.
- GESTALT PSYCHOLOGY, George Hartmann, Ronald Press, New York, 1935.
- THE GROWTH OF THE MIND, K. Koffka (tr. Ogden), 2d ed. rev., Harcourt, Brace, New York, 1928.

## MOEGENESIS

- THE NATURE OF INTELLIGENCE, C. E. Spearman, Macmillan, London, 1923.
- THE ABILITIES OF MAN, C. E. Spearman, Macmillan, London, 1927.

## PERSONALISM

- PERSONALITY, a Psychological Interpretation, Gordon W. Allport, Holt, New York, 1937. Personality and Will, F. Aveling, Appleton, New York, 1931.

## PARAPSYCHOLOGY

- HUMAN PERSONALITY AND ITS SURVIVAL OF BODILY DEATH, F. W. H. Myers, 2 vols., Longmans, London, 1920. The cases cited here are basic to parapsychology.
- NEW FRONTIERS OF THE MIND, J. B. Rhine, Duke University, 1937.
- SCIENCE AND PSYCHICAL PHENOMENA, G. N. M. Tyrrell, Harpers, New York, 1938.
- COSMIC CONSCIOUSNESS, R. M. Bucke, Dutton, New York, 1923. The serious reader should not be put off by the title of this unique study.

## PSYCHOSOMATIC RELATIONSHIPS

- EMOTIONS AND BODILY CHANGES, H. R. Dunbar, Columbia Univ. Press, New York, 1935.
- PSYCHOSOMATIC DIAGNOSIS, H. R. Dunbar, Harper, New York, 1943.

## THEORIES OF PSYCHO-ANALYSIS

- INTRODUCTORY LECTURES ON PSYCHO-ANALYSIS, Sigmund Freud, (tr. Joan Riviere), Allen & Unwin, London, 1922.



- TOTEM AND TABOO, Sigmund Freud, New Republic, New York, 1931.
- THE EGO AND THE ID, Sigmund Freud, L. & V. Woolf at the Hogarth Press, London, 1927.
- NEW INTRODUCTORY LECTURES ON PSYCHO-ANALYSIS, Sigmund Freud, Norton, New York, 1933.
- GROUP PSYCHOLOGY AND THE ANALYSIS OF THE EGO, Sigmund Freud, International Psycho-analytic Press, London & Vienna, 1922.
- PSYCHO-ANALYSIS, Ernest Jones, J. Cape and H. Smith, New York, 1929.
- PAPERS ON PSYCHO-ANALYSIS, Ernest Jones, 3d ed., Bailliere, Tindall, London, 1923.
- THE EGO AND THE MECHANISMS OF DEFENSE, Anna Freud, International Universities Press, New York, 1946.
- ANALYTICAL PSYCHOLOGY, C. G. JUNG (ed. by Constance E. Long) Bailliere, Tindall, London, 1920.
- PSYCHOLOGY OF THE UNCONSCIOUS, C. G. Jung, (tr. Beatrice M. Hinkle), Kegan Paul, London, 1918.
- PSYCHO-ANALYSIS, ITS THEORY AND PRACTICAL APPLICATION, A. A. Brill, 2d ed., W. B. Saunders, London, 1923.
- FUNDAMENTAL CONCEPTIONS OF PSYCHOANALYSIS, A. A. Brill, Harcourt Brace, New York, 1921.
- THE STRUCTURE AND MEANING OF PSYCHO-ANALYSIS, Wm. Healy, Augusta Bronner & Alice Mae Bowers, Knopf, New York, 1930.
- PROBLEMS OF PSYCHO-PATHOLOGY, T. W. Mitchell, Kegan Paul, London, 1927.
- THE PSYCHO-ANALYTIC STUDY OF THE FAMILY, J. C. Flugel, International Psychoanalytic Press, New York, 1921.
- SOCIAL ASPECTS OF PSYCHO-ANALYSIS, Various Authors (ed. Ernest Jones), Williams & Norgate, London, 1924.
- THE UNCONSCIOUS IN ACTION, Barbara Low, Univ. of London Press., London, 1928.
- THE MEANING OF SACRIFICE, R. Money-Kyrle, L. & V. Woolf, London, 1930.

## CONCERNING ANTHROPOLOGY

The literature of personal, individual, and social psychology, immense though it be, is still inadequate to form a science suited to stand beside physics and biology, in their extended modern meanings. Anthropology, the over-all science of mankind, should be that field, but as it stands today it can hardly claim its rightful place, as we are here organizing learning. For although it is established that man does not inherit his culture biologically, the means of that inheritance have not been established. Although man is a species, he is in so many ways different from a biological species as to raise entirely new philosophical questions about his specific nature. The origins of races, even the most recent group which originated the Indo-European languages and was at one time without doubt a well-established physical

type, remains highly speculative. Even physical anthropology, resting upon ingenious measurements, works a good deal at the descriptive level and depends upon highly speculative assumptions for its theory.

We are approaching a time when the contributions from psychology to an over-all science of man may be decisive. For the most important features of human life originate in our inner natures, and there we can already begin to shape up in rational form two quite different truly human functions. There is this ingredient which appears to us as continuing identity, the cognitive function. The puzzle in psychology is what this may be in itself. Associated with that stark fact, which has to be accepted in simple piety, is the complex of mental functions of an abstract character. The unsolved problems of anthropology must continue to deny it equal rank with physics and with biology so long as we are unable to identify what it is we mean when we think of man, as a universal in experience. We have many sound elements in the concept of energy which give it general acceptance. Even life is a clear idea, and offers many evidences of a new aspect of reality not displayed in energy, quite contrary in fact to the behaviour of energy. If we could equally well identify a single embracing principle for mankind, anthropology could begin to take its place.

Such a central principle, however, escapes us, in a strict sense of science. There are not fewer than four different levels of response in man, simple nurture, personal training, (schooling), and higher learning or true education, and the raw cognitive function itself. The two latter mark us out as human. In the most primitive societies, such as the Australian aborigine, living in a stone-age state, Spencer and Gillen long ago found the notion of an abstract (that is, not localized) deity, an idea we regard as a peculiar achievement of advanced society. And at the other end of the scale we are able to collate studies of the lives of religious teachers which show us that while stone-age man lives alongside the sophisticated modern, an occasional individual appears so far ahead of us as to make us all savages by comparison. It is clear, therefore, that much work must be done to distinguish between the two higher levels of learning above enumerated before we can get at the central idea of human nature.

For this purpose of deciding what is our true nature, the psychological factors in religion are foremost in importance. Every sage and seer, every mystic and contemplative, has testified to a range of experience (illumination) which results in a healthful transfiguration and a concomitant experience of human solidarity. We must suppose that such a spiritual experience consists in a metastrophe or a Nirvana which reveals the real character of consciousness, no longer individual and separative, but universal and unifying. This event is something beyond mere abstraction, that somewhat negative event in the soul. Even if we could create a good science of human cultural functions, which we see taking shape in mathematics in general, studies of harmonics, and of semantics (for which we propose to supply bibliographies at some future date), the processes

would still be largely within the confines of the individual. Beneficial religious experience, witnessed by ancients and moderns alike, are something quite beyond all of that. Until that further level can be contemplated as a theoretical principle unifying all mankind, we shall not have the universal required as foundation for a science of man.

Under these circumstances we would suggest, in place of any specific work on anthropology, as now understood, two simple works which make an effort to survey the whole field of human experience.

AN OUTLINE OF MODERN KNOWLEDGE, edited by Dr. William Rose, Grosset and Dunlap (by arrangement with G. P. Putnam's Sons), New York, 1931. In this book of 1054 pages twenty two specialists review each his own subject, informatively, critically, and significantly. The book has the rare merit of being well-planned, printed, and indexed. The writers make clear how much is yet to be established before we shall know very much about man and nature. The atmosphere is one of detachment from the confusion and fads and the journalistic fictitious certitude, which impairs the usefulness of many compilations. Sensationalism is here avoided. The general reader is brought from the topic's beginning up to a date well past the burst of revolutionary discoveries, which began about fifty years ago. The bibliographies at the end of each topic list, and occa-

sionally discuss, fundamental works of the greatest authorities, usually one book of each. The sections are: A. Science, Philosophy and Psychology, preceded by a philosophic and retrospect summing up views held up to the 19th century, and concluding with a survey of recent and contemporary philosophy (both by Professor A. Wolf, University of London). The topics in this section are: The idea of God, The Physical Nature of the Universe, Astronomy, The Nature of Mathematics, Biology and Human Progress, Sex, Psychology, Theories of Psycho-Analysis, The Beginnings of Morals and Culture, The Characteristics and Distribution of the Human Race, The Achievements of Archaeology. Section B: Economics, Political Science, and History. The topics here need no listing. Section C: The Principles of Literature and Art, the topics being Literary Criticism, Painting and Sculpture, Architecture, and Music.

THE OUTLINE OF SCIENCE, edited by J. Arthur Thompson, Putnam, New York, 1922, four volumes, is no less valuable than the foregoing volume, partly because of the generous use of excellent illustrations and the simplicity and directness of style. Together these two works constitute a good review of many important curricular topics in an atmosphere of philosophical implications well above the baneful stock-in-trade of popularization at the descriptive level, sensationalism.

## RELIGION IN HIGHER EDUCATION

During the academic year of 1945-46 a series of faculty consultations was held on different campuses concerning the responsibility of administrative officers and faculty for religion in their institutions . . . . Their function, however, was to discuss and explore this responsibility with like-minded people—like-minded in the sense of being equally concerned with the ends of higher education. . . .

One . . . factor [in the decline of religion in education] was the dubious extension of the doctrine of the separation of church and state to the separation of religion and education. . . . A second factor of even greater influence has been the decline of interest in theological dogma. The rise of the modern scientific account of the universe has destroyed many old beliefs and with them the sense of theological urgency. . . . For all practical purposes, science has replaced religion as the source upon which good, evil and human destiny depend. Accordingly, it is the focus of man's attention. . . . The modern view of the world—which is in large part the work of modern science—does make impossible many of the older religious beliefs. . . . With their moral responsibility to teach the truth as they see it, the emphasis in our colleges and universities, private as well as public, has become secular. . . .

This account cannot be more than a rough sketch of

the factors which have brought about the present low estate of religion in our colleges and universities. . . . There are signs in many quarters, some of them the most unexpected, that the place of religion is due for re-examination. Higher education is undertaking the most thorough and thoughtful study of its curriculum which this century has yet seen. . . .

Two features recur again and again. . . . One is the recognition of the need for and value of some common intellectual background for those who claim to be liberally educated. This is the motive behind the various proposals for a basic set of prescribed courses, the "common core" of a general education. This is also the motive for the "integrating" courses whether historical, philosophical, religious, or all three. . . .

There are many organizations to promote religious life and behavior among college and university students. Sometimes these operate independently of the institution, sometimes with its full blessing and support. . . . All of these extra-curricular religious activities and organizations are valuable so far as they go. The trouble is . . . they cannot go far enough. . . . If religion is relegated to the role of a not-too-important side-show, if its part in our intellectual and emotional tradition is ignored, and if the members of the faculty act with indifference . . . toward these questions of ultimate

import which no discipline can escape and on which religion has had much to say, then . . . a majority of the students will go their way . . . upon the assumption that religion does not matter.

The program of faculty consultations on religion is designed to explore in more detail what is being done, . . . and what ought to be done. . . . From the start it was decided to limit the number of participating institutions. . . . It was obviously important that the consultants should be men and women with full faculty standing and recognition. . . . All in all, during the academic year of 1945-46 nineteen colleges and universities were visited. . . .

The consultants reported that . . . the teaching of religion was inadequate in nearly every instance. . . . Another conclusion which all consultants brought away from their visits was that in many institutions the

majority of the faculty with whom they talked are either hostile to or indifferent toward religion. . . . In some few instances the hostility appears to stem from a low opinion of the scholarship and academic standing of teachers of religion. In most cases, however, it is fear of indoctrination. . . .

The program of consultations will continue during the present academic year. . . . The proper place and treatment of religion in our educational system are two of the pressing problems for the United States. . . . It is perhaps important to repeat that no one solution will suffice. As the character of liberal education, and for that matter of vocational education as well, is studied and curriculums are undergoing profound revision, religion must come in for more attention than it has received for the past seventy-five years. (Abstracted from *The Program of Faculty Consultations*, by John W. Nason, in *The Educational Record*, October 1946)

## THERE IS A WORLD FAITH      Comparative Religion (concluding extracts)

### 6 to 8. RELIGION AS A WAY OF LIFE

#### *Hindu:*

He goes from death to death who here sees manyness . . . Having thus become wise, calm, subdued, dispassionate, enduring, collected, he sees the Self in the Self, he sees the Self as all; nor does sin overcome him, he overcomes all sin; nor does sin consume him, he consumes all sin. Free from sin, free from passion, he is of the nature of Brahman; this is the Brahman-world.—Brahadaranyaka Upanishat, IV, iv, 23.

Fearlessness, purity of heart, steadfastness in knowledge and yoga; charity, self-control, and sacrifice; study of the scriptures, austerity, and uprightness;

Non-violence, truth, and freedom from anger; renunciation, tranquillity, and aversion to slander; compassion to beings and freedom from covetousness; gentleness, modesty, and absence of fickleness;

Courage, forgiveness, and fortitude; purity, and freedom from malice and overweening pride—these belong to him who is born with divine treasures.—Bhagavad-Gita, XVI, 1, 2, 3.

#### *Buddhist:*

To give oneself up to indulgence in Sensual Pleasure, the base, common, vulgar, unholy, unprofitable, and also to give oneself up to Self-mortification, the painful, unholy, unprofitable; both these two extremes the Perfect One has avoided and found out the Middle Path which makes one both to see and to know, which leads to peace, to discernment, to enlightenment, to Nirvana.

It is the Noble Eightfold Path, the way that leads to the extinction of suffering, namely: 1. Right Understanding, Samma-ditthi; 2. Right Mindedness, Samma-sankappa; 3. Right Speech, Samma-vaca; 4. Right Action, Samma-kammanta; 5. Right Living, Samma-ajiva; 6. Right Effort, Samma-yayama; 7. Right Attentiveness, Samma-sati; 8. Right Concentration, Samma-samadhi.—Samyutta-Nikaya, 56.

All that we are is the result of what we have thought: it is founded on our thoughts, it is made up of our thoughts. If a man speaks or acts with a pure thought, happiness follows him, like a shadow that never leaves him . . . "He abused me, he beat me, he defeated me, he robbed me"—in those who do not harbor such thoughts hatred will cease. For hatred does not cease by hatred at any time: hatred ceases by love—this is an old rule . . .

They who know truth in truth, and untruth in untruth, arrive at truth, and follow true desires.—The Dhammapada, the Twin-Verses.

#### *Confucianism:*

The superior man in everything considers righteousness to be essential. He performs it according to the rules of propriety. He brings it forth in humility. He completes it with sincerity. This is indeed a superior man. The superior man is distressed by his want of ability. He is not distressed by men's not knowing him. The superior man is dignified, but does not wrangle. He is sociable, but not a partisan.

Tsze-kung asked, saying, "Is there one word which may serve as a rule of practice for all one's life?" The Master said, "Is not *Reciprocity* such a word? What you do not want done to yourself, do not do to others."—Analects of Confucius, vx.



*Christian:*

Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report; if there be any virtue, and if there be any praise, think on these things.—Philippians, 4. 8.

If any man love the world, the love of the Father is not in him. For all that is in the world the lust of the flesh, and the lust of the eyes, and the pride of life is not of the Father, but is of the world.—John 2. 15-16.

*Hebrew:*

And what doth the Lord require of thee, but to do justly, and to love mercy, and to walk humbly with thy God?—Micah, 6, 8. Loving-kindness is greater than law; and the charities of life are more than all ceremonies.—Talmud.

*Moslem:*

The path of seven stages of Sufism: 1. Repentance, 2. Abstinence, 3. Renunciation, 4. Poverty, 5. Patience, 6. Trust in God, 7. Satisfaction.—Sufism, Kitab al-Luma'.

*Taoist:*

Here are three fundamentals on which to depend, wherein culture is insufficient. Therefore let all men hold to that which is reliable, namely, recognize simplicity, cherish purity, reduce one's possessions, diminish one's desires.—Tao-teh-king, xix.

Tao has three treasures which he guards and cherishes. The first is called compassion; the second is called economy; the third is called humility. A man that is compassionate can be truly brave; if a man is economical he can be generous; if he is humble he can become a useful servant.—Ibid., lxxvii.

## 9 & 10. THE UNION OF MAN WITH GOD

*Buddhist:*

The disciple will overcome the earth, and the world of Yama, and the world of the gods. The disciple will find out the plainly shown path of virtue, as a clever man finds the right flower. He who knows that this body is like froth, and has learnt that it is as unsubstantial as a mirage, will break the flower-pointed arrow of Mara, and never see the king of death.—Dhammapada.

*Hindu:*

The One God hidden in all living beings,  
The Living Witness biding in all hearts—  
The Wise who seek and find Him in them-self,  
To them and none else, is Eternal Joy.  
The all-pervading Inner Self of all,  
Who from His Formlessness creates all forms—

The wise who see that One within them-self,  
To them alone belongs Eternal Joy.

—Shvetashvatara Upanishat, vi, 11, 12

In the vast Brahman-wheel, the source and support of all embodied Spirits, the ego is made to wander, thinking himself and the Ruler different. United with Him, he obtains immortality.—ibid, 1, 6.

*Christian:*

Behold, the kingdom of God is within you.—Mark, 17, 21. He is not far from everyone of us. For in him we live and move and have our being; as certain also of your own poets have said: For we are also His offspring . . . We are the offspring of God.—Acts, xvii, 27, 28, 29. Know ye not that ye are the temple of God, and that the Spirit of God dwelleth in you? If any man defile the temple of God, him shall God destroy; for the temple of God is holy, which temple ye are.—1 Corinthians, iii, 16, 17.

*Hebrew:*

I have said, Ye are Gods; and all of you are children of the Most High.—Psalms, lxxxii, 6. God created man in His own image, in the image of God created He him.—Genesis, 1, 27. When I consider thy heavens, the work of thy fingers, the moon and the stars, which thou hast ordained; what is man, that thou art mindful of him? and the son of man that thou visitest him? for thou hast made him a little lower than the angels, and hast crowned him with glory and honour.—Psalms of David 8, 3-5.

*Moslem:*

God saith: The person I hold as a beloved, I am his hearing by which he heareth, I am his sight by which he seeth, and I am his hands by which he holdeth, and I am his feet by which he walketh.—The Sayings of Muhammed, p. 115. My earth and my heaven contain me not, but the heart of my faithful servant containeth me.—Traditions.

*Taoist:*

Attain to the goal of absolute vacuity; keep to the state of perfect peace.

All things come into existence, and thence we see them return. Look at the things that have been flourishing; each goes back to its origin. Going back to the origin is called peace; it means reversion to destiny. Reversion to destiny is called eternity.

He who knows eternity is called enlightened. He who does not know eternity is running blindly into miseries. Knowing eternity he is all-embracing. Being all-embracing he can attain omnipresence. Being omnipresent he can attain supremacy. Being supreme he can attain Tao. He who attains Tao is everlasting. Though his body may decay he never perishes.—Tao-teh-king, xvi.